



Between the Private and the Public

Formal carsharing as part of a sustainable
traffic system. An exploratory study

*Mikael Klintman
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REFERAT (Syfte, Metod, Resultat)

I rapporten undersöks bildelning som en del i strävan mot ett ekologiskt och socialt hållbart samhälle. Den teoretiska ramen bygger på forskning inom samhälls- och beteendevetenskaperna, samt transportekonomi. Tre analytiska nivåer kan särskiljas: (i) generella tendenser, (ii) organisationsformer och (iii) medlemmarnas karaktäristika. Empirin utgörs av intervjuer med praktiker och forskare, tryckt material samt data från Internet. Antalet medlemmar i de 34 bildelningsorganisationer (CSO:s) som tillhör European Carsharing Association (ECS) är minst 36 000, med en markadspotential beräknad till 3% i Tyskland och 8,8 – 17,7% i Österrike. Organisationernas grad av "framgång" kan delas in i miljö- organisations- och expansionsframgång, former som inte alltid pekar i samma riktning. Den genomsnittliga bildelaren är man, 30 – 40 år, högskoleutbildad och har ett uttalat miljöintresse. Dock har denna sociala kategori ofta varit överrepresenterad i bildelningsprojekt. Medlemmar i CSO sparar pengar om de kör mindre än 12 000 - 15 000 km per år jämfört med privata bilägare. Resultat visar att (i) närhet mellan bostadsområde och bildelningsstation, (ii) kvalitet på kollektivtrafik och (iii) parkeringsmöjligheter är avgörande omständigheter för bildelning. Nya projekt bör startas i områden där dessa omständigheter är goda och där människornas demografi representerar den genomsnittliga befolkningen.

ABSTRACT (Aim, Method, Results)

This report examines carsharing from two aspects: ecological and social sustainability. The theoretical framework is based on the social/behavioral sciences and transport economics. Three levels of analysis are presented: (i) overall carsharing tendencies, (ii) forms of carsharing organizations (CSO:s), and (iii) member characteristics. Empirical sources include interviews with practitioners and researchers, printed material on carsharing, and data from the Internet. The number of carsharers in the 34 CSO:s that belong to European Carsharing Association (ECS) is at least 36,000, with the market segment potential calculated at 3% in Germany and 8.8 – 17.7% in Austria. "Success" of CSO:s ought to be divided into environmental, organizational and expansionary forms of success. The average carsharer is male, aged 30-40, with a university degree and environmentally oriented. Yet carsharing projects have been biased towards residential areas where this social segment is over-represented. Carsharers save money if they drive less than 12,000 to 15,000 km per year compared to private car owners. Data indicate that the (i) proximity between neighborhood and carsharing station, (ii) quality of public transport, and (iii) parking situation are critical preconditions for carsharing. The author finally suggests that carsharing projects be implemented in residential areas which "score high" in the three variables, and which are more representative of the average population.

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*Mikael Klintman
Lunds universitet*

Preface

This report is based on a project called "Between the private and the public: Societal Preconditions for Carsharing as Part of a Sustainable Urban Traffic System" (Swedish original: "Mellan det privata och det kollektiva: Samhällets förutsättningar för bilpooler som en del av ett hållbart stadstrafiksystem."). The project is financed by the Swedish Transport and Communications Research Board – KFB, for the fall of 1997 (Dnr: 1996-0497). The project leader has been Prof. Anna-Lisa Lindén, Department of Sociology, Lund University in Sweden.

There are several people who have been very helpful and who have kept my enthusiasm up during the very intensive research period. First of all, my advisor Prof. Anna-Lisa Lindén, has been tremendously supportive as usual. Her broad knowledge of social and environmental implications of traffic issues has really helped me become aware of the multiplicitous nature of carsharing as a research object. Another encouraging person has been Prof. Martin Wachs at the Dep. of Urban and Regional Planning, UC Berkeley. During my academic year 1996-97 in Berkeley he was my advisor, and introduced me to the complexity of traffic problems and policy in the U.S.. His advice during my studies of carpooling in the U.S. has been very significant for this report. I further want to thank Guro Berge and the other people at The Institute of Transport Economics in Oslo, for inviting us from the Environment and Society Group at the Dep. of Sociology in Lund. The Norwegian research team has provided this project with a lot of important information and ideas. Other very useful contributions have been made by a number of people whom I also thank for their patience with my sometimes endless questioning. They are, in random order: Peter Markusson, Magnus Pettersson, Conrad Wagner, Michel Gabrielsson, Stefan Blasel, Roger Theunissen, Joachim Schwarz, Anna Engström and the other people from Dep. of Environmental Science in Gothenburg, Andrea at RIDES in Menlo Park, California. Finally, I want to thank Scott Barretta for correcting my English.

Mikael Klintman
Lund, Jan. 1998

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1. Introduction

1.1 Research Aim

This is an exploratory study focusing on shared car ownership and use as an alternative to private car ownership. The aim is to provide an overview of factors critical for the political, organizational, economic, and environmental success of carsharing organizations (CSO:s). The history of organized carsharing is fairly brief. Aside from early anecdotal examples, one could say that today's carsharing movement is less than two decades old. Germany, Switzerland, and Austria have been pioneers, but this organizational innovation has spread, and is spreading to other European countries and North America.

The background to our research interest in CSO:s is at least twofold. Firstly, carsharing has been claimed to have significant implications in the struggle towards an ecologically sustainable society. We will survey these implications, and see under what circumstances carsharing can become part of a broader ecological struggle. Secondly, carsharing is relevant to the issue of democratizing Mobility, towards a socially sustainable society. It is well worth asking: "Can carsharing be seen as a promising alternative to the perhaps democratic but ecologically questionable one-automobile-per-adult goal?" This in turn leads to reflections on the cultural and social psychological aspects of man and the automobile.

In this report, we will shed light on the diversity of the carsharing issue, and suggest how the factors mentioned above can be categorized. In addition, an important goal is to generate and formulate further questions that can be compared systematically between carsharing organizations in subsequent studies.

Previous studies have indicated the environmental advantages of carsharing compared to private car ownership. Carsharers in Germany, for instance, have diminished their car use by 42.1%, from 7.000 km/year before membership, to 4.050 km/year after entry into a car sharing organization.¹ Moreover, carsharing members in Switzerland use public transit for 75.8% of their travel mileage, the rest being complemented by carsharing and other forms of car transport. The inverted proportion is true for the average car owner in Switzerland.² The general tendency is that members of CSO:s drive automobiles less often and have lower yearly mileage than the average user of a privately owned car.³

In addition to the environmental implications, there are a number of other factors of great interest. Since carsharing is such a new phenomenon, many of its aspects have not yet been sufficiently explored in research. There have been few systematic analyses in the English language are very few, as the most active CSO countries have so far been German speaking. In the questions presented below, we try to cover a broad range of aspects, including previously unexplored ones. But first it needs to be clarified what is meant more specifically by *carsharing*.

¹ Baum & Pesch (1994). See also Muheim & Partner for ECS (1996).

² Muheim & Inderbitzin (1992).

³ <http://members.aol.com/CarSharing/wagkat.html> (970911).

1.2 Definitions

It is rather common that *carsharing* gets confused with other, related terms. One reason for this is that the term carsharing has been used differently in North America than in Europe. In the U.S. there are a few examples of carsharing denoting a "softer" form of sharing, i.e. related or unrelated travelers sharing *rides*, especially for commuting to and from the workplace, but *carpooling* is usually the American English term for sharing rides in an automobile. In Europe, *carsharing* stands for a "harder" form of sharing - sharing the ownership or usage of the car (excluding ridesharing), in various forms of carsharing organizations (CSO:s). These organizations have, to make things worse, sometimes been labeled *carpools*. But the different actors in Europe have seemed to move towards only allowing the term *carsharing* to denote automobile sharing which is *sequential in time*, and so will we in this study. As carsharing is slowly getting more popular in North America, this distinction of terms is likely to become fully accepted there too. In short, formal carsharing here stands for:

The practice where a number of people share the ownership of one or more automobiles, and/or people sequentially sharing the usage of one or more automobiles that are owned by a profit or non-profit carsharing organization.

This table makes it clearer:

	Informal	Formal
Car Pooling	Informal driving community, hitchhiking	Ride-Share projects, vanpools
Car Sharing	carsharing in the household, car lending between acquaintances	taxicab, contractual sharing of cars, Car sharing Organizations , car rentals

Original sources: Muheim & Inderbitzin (1992); Baum & Pesch (1994).⁴

It is thus the bottom right cell that is highlighted in our report. As cooperative carsharing is by far the most common form, most attention is devoted here to car cooperatives. However, comparisons with the other squares are made in order to put formal carsharing into perspective.

1.3 Research Questions

The questions that this report deals with are many. They can be roughly divided into three levels of society: the macro, meso and micro. The most important questions are:

⁴ The table was found in Muheim & Partner for ECS (1996).

Macro Level: Overall Tendencies

- What does the political and ideological context of carsharing look like?
- In what ways can carsharing be regarded as *environmental action*?
- Is carsharing by necessity good for the environment, reducing traffic-induced problems?
- What is/ought to be the relation between carsharing and other travel modes?
- What does the overall carsharing situation in Europe and North America look like today?
- Can the market segment potential of carsharing be estimated?

Meso Level: Organization

- What Organizational forms of carsharing exist?
- How can *success* of CSO:s be defined; are these definitions in conflict?
- Is the CSO a typically urban phenomenon?
- What are the organizational/social/economic/practical preconditions and obstacles to a more than a marginal carsharing movement?

Micro Level: Members

- Who are the CSO members; their demographic features?
- How did the carsharers travel before their membership?
- Do their travel patterns deviate from those of the average population of car owners?
- Is carsharing likely to spread to other social segments?
- What can we learn from carsharing about cultural symbols and less "Mobility functional" aspects of private car ownership?

1.4 Methods and Sources

The following methods have been used:

The theoretical framework and the research questions are based on readings of theoretical and empirical works within various fields: sociology, social psychology, economic psychology, ethnology, human ecology, urban studies, and transport economics. In addition, statistics on travel patterns, car ownership etc., have been analyzed. This broad background was necessary in order to get a comprehensive view of the problem.

Furthermore, the Internet has been a very useful search source. A certain part of the material analyzed in our study is unpublished, and is only available on the Internet. Some of that material is not as systematic and rigorously collected as one would require from "scientific" data. It is very easy to find more or less uncritical success stories there. Therefore we have been careful not to draw too far-reaching conclusions from those sources. Other pieces of information on the Internet are, on the other hand, directly based on more rigorous surveys, something that has made it more reliable. As a curiosity, we estimate that 90% of the Internet addresses on CSO:s are written only in German.

Written material directly from CSO:s and research boards has been another important source of information. Finally, meetings and written interviews with people active either as researchers or practitioners in CSO:s in Europe and North America are invaluable parts of this research project.

While examining the carsharing phenomenon from as broad range of sources as possible, we have studied a few carsharing organizations more thoroughly than others: Majornas Bilkooperativ in Gothenburg, Sweden, Bilkollektivet in Oslo, Norway, StattAuto in Berlin, Germany, and Mobility in Switzerland (see chap. 4). These CSO:s have been chosen strategically, in two ways. Firstly, we chose them based on the fact that we had access to more material and data from these organizations than from other CSO:s. This principle of selection runs the risk of leading to a choice of CSO:s which have been more successful than the average. However, it was not within our scope to find “average” CSO:s; only to illuminate as broad a range of carsharing factors as possible. Besides, it is hard to say what an “average” CSO would be, and to decide in what way the CSO:s ought to be “average” in order to be selected. In later and more specified studies, aspects of normality can be selected and grounded on the theoretical framework. A second strategic basis was that the above mentioned CSO:s should represent different countries. One could also have chosen four CSO:s in Germany, or two in Sweden and two in Switzerland, for instance; but then it would have been more difficult to identify the impact of different cultures of public transit on carsharing. In addition to the four CSO:s, systematic research in Austria has let us also illuminate their carsharing situation.

1.5 The Structure of the Study

The report has five chapters. After the introduction, **chapter two** presents a multitude of theoretical angles relevant to carsharing. These angles range from the macro level to the micro level. This part is thought of as useful in itself for its aggregation of ideas and questions for subsequent studies. In other words, we do not have the ambition of fully answering all the questions that emerge from the theoretical chapter; instead, the main purpose is to illuminate tendencies and show ways to move on from there. The **third chapter** presents a brief investigation of the carsharing situation on a larger scale in Europe and North America. The potential for a growing carsharing movement is also touched upon. **Chapter four** is the main part of the study. Practical, organizational, economic and environmental aspects are analyzed by looking “inside” of a number of carsharing organizations. By studying the situation for CSO members as groups, we here complement the picture of market potential given in chapter two. Another goal in chapter four is to provide a more nuanced picture of the environmental gains of carsharing. In the **fifth chapter** we discuss the findings and summarize questions that need to be studied further and more in-depth.

2 Theoretical Framework

2.1 Environmental *Problems* and Democratic Mobility

2.1.1 Society and Problem Awareness

The late eighties and the nineties have often been characterized as a time of increasing environmental consciousness and environmentally friendly behavior. A basis of this report is the claim that there is indeed an actual, environmental state or situation *out there*. This said, environmental *problems* become analyzable within the social sciences first when the situation has been labeled *problematic* by actors in society. Nevertheless, we are concerned with the *actual* environmental situation. The fact that we acknowledge a possible gap between the actual environmental situation and what are socially perceived as environmental problems has some logical consequences for how we look upon environmental action. It ought to make us more aware of the common gap between what is perceived as *environmentally beneficial behavior* and the actual environmental impact the behavior may have.

2.1.2 Mobility, Sustainability and Ideology

The use of the automobile as the dominant urban means of transportation has by no means always been regarded as problematic. When studying the history of urban transport, one easily finds examples to the contrary. In 1899, the famous journal *Scientific American* held that a general transition into automobile transport would lead to improvements of the urban environment that could not be overestimated. Car traffic would according to this journal make the streets clean and free from dust and odour. The light vehicles on rubber wheels moving quickly and quietly would eliminate a large part of the nervousness, irritation and stress of the modern city life (*Scientific American*, 1899).

During World War II great gasoline shortages were perceived. This led to drastic rationing of gasoline and much reduced private car use all over the Western world. During the 25 years that followed the end of World War II, few problems with gasoline shortages or automobile use were acknowledged. By that time there was more or less of a consensus among transportation policy makers in both Europe and America: *In order to move away from the Depression and war-burdened economy, new highways must be constructed; transportation growth is a necessary part of economic growth.* In many regions traffic congestion was solved by constructing more and broader highways, rather than by trying to reduce the number of vehicles.⁵ This expansionist way of thinking can be seen in a larger societal context, as an example of what Ulrich Beck has called values of *simple modernity*. Within these values there was a confidence that the standard of living and the quality of life would be improved merely through the modernist tools of science, technology, economy and exploitation

⁵ Wachs, M. (1991, p. 333).

of land.⁶ Until the late sixties, carpooling was almost unheard of, except in the form where relatives and friends shared rides. Exceptions such as carpool schemes in large corporations and local interest groups (e.g. anti-pollution organizations) were marginal parts of the transportation picture during that time.

A considerable part of the decision-making during the two and a half decades after World War II was based on what Taebel et al. (1975/1986) have called *the ideology of automobile monopolism*. This implies that the emergence of the automotive society was in many instances perceived as necessary for a broadly welcomed industrial expansion. According to automobile monopolists, progress could be measured by cars per capita as well as by street and highway mileage.⁷

Renewed problem awareness was a consequence of the energy crisis in 1973-74. More than half (54%) of the petroleum resources in the U.S., or one fourth of all of the national energy, was used for transportation.⁸ The severe gasoline shortages made actors at all levels of society reduce their gasoline consumption "automatically" -- gasoline stations had only limited quantities of gasoline. The incentives to organize carpools were strong among employers, since they saw the risk of productivity being disturbed if employees were to show up irregularly. Moreover, the employees were clearly motivated to use less gasoline due to, among other things, dramatically increased gasoline costs and long lines at the gasoline stations. Some companies tried to get their employees out of the gasoline station lines by offering them flexible work hours, free parking for car poolers and company-sponsored car share matching.⁹

Among policy makers at the national level, the advantages of a transition from Single Occupant Vehicles (SOV:s) to carpools were well recognized. Increased auto occupancy (from 1.4 to 2.0 persons in average per vehicle) would lead to 30% gasoline savings per day, while doubling public transit would only lead to approximately 5% gasoline savings per day.¹⁰ In addition, discernibly increased public transit would be much more expensive for governments, since it would require large public subsidies. Using Taebel's et al's terms, this strategy can be placed in the ideological category of *automobile apologism*. In contrast to the automobile monopolists mentioned earlier, apologists recognize that uncontrolled growth of car use and car ownership is problematic. But they are furthermore concerned with keeping subsidies to public transportation at a minimum, while still finding the preservation of road and street networks fundamentally important. Automobile apologists therefore see stimulating carpooling by less costly instruments as ideal.¹¹

Nevertheless, we have strong evidence today that both private car ownership and car use increased immensely, while carpooling decreased between 1970 and 1990. This has happened despite the more thorough problem awareness regarding the automobile as a source of multi-faceted environmental problems. It is interesting to note that the increase in car ownership per capita, as well as the *decline* in carpooling in favor of solo driving between 1970 and 1990, can to some extent be associated with

⁶ Beck, U. (1986/1992).

⁷ See also Lash, S. (1993).

⁸ Taebel, D.A. & Cornehl, J.V. (1975/1986, pp. 200-201).

⁹ Bonsall, P. W. (1979, p. 2).

¹⁰ Dunphy, R. T. & Lin, B. C. (1990, p. 5).

¹¹ Dueker, K. J. & Levin, I. P. (1976, p. 1).

¹² Taebel, D.A. & Cornehl, J.V. (1975/1986, pp. 202-203).

changes in society that most people regard as *positive*; higher average education and more women in the workplace are the most obvious ones. On the other hand, negative social changes, such as an augmented proportion of households with financial difficulties (in the U.S. especially) has made the car ownership uphill slope less steep than it would have been without this increased inequality. What conclusions should be drawn from the fact that social and ecological ends do not seem to meet? The term "democratization of mobility" is relevant here.

In some discussions within transport planning, mobility is treated merely as a means. The concept of mobility is thus often put within the continuum of necessary or unnecessary; mobility in relation to work – to the workplace, and business trips – often has the highest status. However, as Tengström (1995: p. 17) stresses, mobility in modern urban society should not be seen only as a means, but also as an end – "a value in itself."¹² We also need to acknowledge the intrinsic value of mobility and access in modern urban way of life, for people who are not in the middle of a carrier. Some transportation researchers who are concerned with democratizing mobility stress how unequal the distribution of automobiles is between different social categories. One of their questions is: "Will racial and ethnic minorities, as well as other less privileged categories, fully join the mainstream car-owning classes?"¹³ With Taebel et al.'s terminology, the ideology on which this question is based can be called one of social engineering, or "humanistic automobile monopolism."¹⁴ Short-term goals of increased social equality are focused upon here. These researchers claim, correctly, that if public policy *merely* helps to increase the cost of auto use as a means of reducing auto ownership and use, it runs the risk of mainly affecting groups on the margins.¹⁵ However, we hold that to translate this situation into the goal "one-automobile-per-adult" is highly questionable concerning questions of sustainability and congestion. Trying to reduce inequalities in mobility between different social categories is a very important goal, yet it may be dangerous to do so by increasing the number of cars on the road.

Moreover, proponents of the one-automobile-per-adult solution in the Western countries should consequently be in favor of this solution in non-Western countries as well:

Another critical observation applies to the absence of a global perspective in most of the studies (the contributions made by Goodland, Whitelegg and Wright are exceptions). Economic and social changes in South-Asia, China, India, Eastern Europe and Latin America seem to result in a rapidly growing demand for automobiles. If a globalization of the automobile takes place, the global conflict about natural resources (oil, natural gas etc.) will become more acute. And so will the debates on acceptable levels of global emissions of carbon dioxide. It therefore seems necessary to analyze the future of automobility in a global setting.¹⁶

¹² Tengström, E. (1995).

¹³ Pisarski, A.E. (prep. 1996, chap. 4).

¹⁴ Taebel, D.A. & Cornehl, J.V. (1975/1986, pp. 204).

¹⁵ Pisarski, A.E. (prep. 1996, chap. 4).

¹⁶ Tengström, E. (1995).

The consequences of such an increase in automobile use to health and ecological systems can only be imagined. In the struggle towards democratization of Mobility, more environmentally sound alternatives to solo driving and “one-automobile-per-adult” must be made much more convenient for everyone.

In this study we will examine ideological aspects of the emerging carsharing movement. So far, it can be said that carsharing organizations ought to be strongly in favor of an improved system of public transport. This must logically be the case, since the idea of carsharing is to supplement alternatives to automobile use. In addition to bike riding and walking, public ridesharing for daily routine trips has proven to be essential. Adding to the list of aesthetically doubtful ideological concept constructs, the carsharing movement may fall within the segment that we can call *automobile complementarists*. This category falls outside of the ones mentioned above as well as Taebel’s et al.’s ideological approaches: *balancers* and *ecologists*. The former of the two concepts implies a “balance” where public transport is a complement to automobility instead of vice versa. The latter approach is less pragmatic than Automobile complementarism, and aims at a fundamental restructuring of the whole urban environment (see Taebel et al., pp. 205-6). However, as we will see, automobile complementarists often have a strong and active ecological interest. In addition, they tend to appreciate the cooperative idea and shared ownership.

2.2 Carsharing As Environmentally Related Action

2.2.1 Simple versus Comprehensive Environmental Action

So far, we have dealt with the importance of achieving an understanding of the (social) complexity of the aspects of the environmental situation labeled as *problems* in society. In the social sciences concerned with these issues, initial attention is usually given to human actions which are thought to be positively or negatively associated with certain environmental *problems*. The term *environmental action* is used in a very wide sense here. It comprises human action believed to be associated with the environmental *problem* that we are interested in. Environmental actions or environmentally related actions can include policy making at the structural or systemic level, for example those scientific and political processes in which agents within powerful institutions decide what levels of pollution to define as *acceptable*. Environmental action and practice can also be travel patterns within a household: e.g. private car ownership and use versus use of public transport with membership in a carsharing organization as a complement.

Different kinds of environmental action can be distinguished based on three variables:

- A) Simple actions (i), with less consequences for our other parts of the everyday life of every household, versus comprehensive actions (ii) with more consequences..
- B) Actions that are less (i) versus more (ii) supported by social and physical structures; how supportive the structures are varies between different countries, and substantial variations can also be found at supra-national levels.

Let us look at some empirical studies on the matter:

In a study done in Orange County in California, the following order was found between the three above mentioned types of environmental action: 68% of the citizens "often recycled," 51% "often chose to buy environmentally friendly products," and 35% "often limited their use of the privately owned automobile."¹⁷ The Swedish study from 1990, "Environmental Behavior League," showed similar results: 77% left their newspapers for recycling, 54% bought environmentally labeled daily products, and 42% walked or rode their bicycle instead of using motorized transport; all these actions were performed always or frequently.¹⁸

When analyzing the preconditions and obstacles to carsharing, it is critical to study the variables mentioned above. Before moving over to the empirical part of the paper we hypothesize that that some supportive structures may turn out to be especially important: i) access to convenient public transport systems, ii) physical closeness to the carsharing organization, iii) neighborhoods or other social networks that support the individual household and stimulate cooperation.

2.2.2 The Relativity of Environmental Impact: Carsharing as a Complement or Competitor to Public Transit, Bicycling and Walking

It is common that environmentally related actions or habits relate to more than one problem within the environmental debates at different levels of society. To continue the example of automobile use, this type of action has been linked to a number of environmental factors such as: traffic congestion, exploitation of natural habitats by an increasing "need" for new highways, and excessive use of non-renewable energy resources. The consequences of environmental actions are often not seen as separated from the rest of the social world, but they can in many instances be analyzed as parts of the larger structures of society. The dominance of the automobile as means of transportation in the Western countries, for example, has been a crucial factor for today's infrastructure and city planning.¹⁹ This has in turn had a strong influence on the social ecology and certain urban problems.²⁰

Furthermore, specific types of action have to be put in relation to their alternatives, in order for us to regard them as "environmental actions", as an environmental improvement. Carsharing is often looked upon as an environmental action in itself. The cooperative and alternative features of carsharing support this picture; it is also easy to get an image of the members as people who are environmentally conscious in other lifestyle areas. However, this early judgement is too simplistic. Researchers with a focus on environmental actions, ought to ask: "Has any change in an environmentally beneficial direction actually taken place?" When studying patterns of everyday consumption, this question becomes very complex, and everyday consumers often have difficulties in getting coherent answers. The term *environmental adaptation* is often used as though it referred to something absolute, while it actually

¹⁷Baldassare, M. & Katz, C.

¹⁸Lindén, A-L (1994) from Bennulf & Gilljam (1991).

¹⁹ Wachs, M. & Giuliano, G. (1991).

²⁰ Freund, P. & Martin, G. (1993).

- C) Actions, whose consequences for other parts of everyday life vary from less (i) to more (ii) depending on household characteristics, e.g. life cycle stage – parents with young children versus seniors, etc.

The first variable (A: simple – comprehensive actions) is closely related to the "nature" of the actions. The second variable (B) connects to the social context, and the third (C) to household lifestyles. In order to understand the degree of feasibility of an environmentally beneficial action, all three aspects need to be taken into account.

Here are three short examples:

1) *Recycling of paper and glass* can be seen as a rather simple environmental practice *per se* (Ai), in that it usually does not involve much competition between different household interests – time, money, or other threats to the household's standard of living. This, however, is highly dependent upon well developed and supportive structures (Bii), such as recycling bins placed closely to residential areas, clear information of what to recycle and why, and non-excessive costs for collecting the recycled material.

2) For a household *to change from conventional to "environmentally friendly" household detergents* may be a bit more comprehensive practice (Ai-ii), since it can involve uncertainties regarding the quality of the products, i.e. how clean the washes will get. That is a possible interest conflict. Aside from that, changing detergents does not require much extra time, effort, and perhaps not much more money either. Yet the degree of simplicity presupposes initial action at the structural level (Bii) such as scientific testing of detergents, environmental labeling to help consumers, quality improvement etc.

3) A third environmental action type, *changes in travel behavior and travel habits*, falls within the group of more comprehensive environmental actions (Aii). Different travel modes tend to vary considerably in terms of how costly and time consuming they are, and how daily trips and trajectories can be coordinated between household members. The competition between different household interests ("internal cross-pressure" or "supplement gains/losses") tends to be higher. This can be said in general about travel modes. Still it is important to note that the level of comprehensiveness is likely to differ depending on the social category of the individual household (C). The preconditions are often very different between people in different stages of the life cycle. Students in single households tend to be able to use bikes or busses as their main means of transportation, something that may be more difficult for households with small children. In addition, different localities, regions and nations vary tremendously in their provision of more or less supportive structures (B) for more environmentally sound travel patterns. Public transport systems, bicycle lanes, safety for pedestrians at night are parts of structures that can be everything from non-existing to well-developed in different areas and regions.

is of a highly relative nature. A product or an action that is at one time classified as *environmentally friendly* may be rejected for environmental reasons one month later. Furthermore, expert scientific judgments about environmental impacts vary between different institutions and countries, whose interests aside from the environmental may have consequences for the judgments. In addition, claims from corporations about being *environmentally friendly* may, but do not have to, be based on a rejection of one of the environmentally destructive parts of production, without the other stages of the production process being critically examined. This is commonly done by using (quasi)scientific claims and language in the old modern way -- as if scientific knowledge were absolute and unquestionable. A so-called *change of corporation policy towards environmental adaptation of products* may, for example, be used to start selling highly poisonous household chemicals in refills.

Fortunately, analyzing the environmental role(s) of carsharing can be fruitfully done in easier ways. Some examples of bases of comparison are:

- 1) *The travel history of the members*: For instance: Have most of them been "full-time" bicyclists or have they been solo drivers in big cars without catalyst cleaning? Do they actually drive less mileage than before membership? This could in turn be compared with the level of mobility and access.
- 2) *The whole lifestyle of traveling*: According to "the law of Zahavi," the average period of time that people spend on trips has a strong propensity of remaining constant.²¹ Applied to carsharing it could be asked: if time is saved by changing from public transport to carsharing for some trips, are people then likely to drive longer with the shared car than they would travel with public transport? Despite the *law of Zahavi*, this is still an open and empirical question, partly due to the organization and the ways members pay for their trips. Moreover, it can be studied whether "the law of the constant travel time" is also connected to a (not yet tested) "law of the constant travel cost." In other words: Do the persons or households that save an amount of money by changing from private car ownership to membership in a carsharing organization, use these savings for more traveling - higher mileage, airplane tickets, more leisure trips, etc.?
- 3) *The probable travel future of the carsharing members*: Is membership in a carsharing organization a bridge over to private car ownership for many people? This is naturally a question related to former non-car owners. We could ask if carsharing generates an identification of members as automobile users; and if so, whether it will lead to actual private car ownership. The variable of members' life cycle stages is central in this context. The probability of getting schooled into increased automobile use may depend on what stage the members are in. If a member is for instance just before the lifecycle stage where most carsharers are located, the "risk" of a change into private car ownership and excessive car use may be less likely.

²¹ Zahavi, Y. (1977); Vilhelmsson, B. (1990, 16); Lindén, A-L. (1996).

2.3 The Behavioral and Social Sciences: The Study of Man, Society and the Automobile

2.3.1 Similarities and Differences of Research Questions

The relation between man and the automobile is studied from a number of perspectives within the behavioral and social sciences. We will present the foundations of a few of them here: a) *purely behavioristically-based environmental research*, b) *the cognitive branch of behavioral research*, and c) *environmental sociology*. *Environmental sociology* will get a bit more emphasis in some parts of this study. But let us first look at the other two approaches.

Within a) *behavioristically based environmental research* it is common to use terms such as *behavior change techniques* and *behavioral intervention*.²² One thing that this type of research may share with other relevant approaches is an interest in the concrete and manifest cause of environmental deterioration: human behavior. The fact that human action is directly visible (as opposed to values and beliefs) makes a purely behavioral researcher avoid some of the methodological difficulties that, for example, studies of environmental attitudes can involve.

One branch of behavioral research - *the cognitive branch* - has in another respect moved closer to the research direction of environmental sociology. The cognitive branch takes an interest in the inner, creative processes and formations of meaning within an individual. Hence, the concept of *behavior change techniques* has here been replaced with *motivational techniques*.²³

Although the c) environmental sociology emphasized in this paper very much shares the interest in human behavior and in human creative processes, its foci differ in some fundamental ways from the other schools. A crucial difference is that behavioral and cognitive social psychology often have a strong "top-down" perspective. The chief question within those traditions can be so formulated: "How can the leading institutions of society make people change their everyday habits in environmentally beneficial ways?"²⁴ When environmental sociology devotes attention to behavior change, the questions are generally broader, for instance: "How can society improve the conditions for its members to actively participate in the work towards environmental improvement; and how can the organizations of society be modified so that citizens are ready to take their own 'environmental initiatives,' initiatives that sometimes go further than governments appreciate?"

When studying the empirical material of this study we hope to map out the modifications that might be the most important for increasing alternatives to private car ownership. So far we can hypothesize which modifications these might be, for example: improvements of public transport systems, facilitation of the procedures for starting car sharing organizations, increased collaboration between municipalities and organizations, and less expensive parking for shared cars than for privately owned ones.

²² See De Young, R. (1993). See also Dwyer, W. O. & Leeming, F. C. (1993).

²³ See e.g. Geller, E. S., Winett, R. A. & Everet, P. B. (1982).

²⁴ Klintman, M. (1996, p. 9).

2.3.2 Action, Attitudes, and Values

In studies of man and the automobile it is common to survey people's attitudes towards car traffic and car transport. Here follows a brief summary of the theoretical relation between action, attitudes and values. In classical attitude theory, *attitudes* consist of three components: a) the affective, b) the cognitive (knowledge), c) the conative components (the propensity to act, with consequences for the environment). We can have attitudes towards something concrete, such as automobile use, or towards something more abstract, e.g. pollution prevention. When researchers within social psychology talk about *attitudes towards something*, they often refer to the interaction of the three components.²⁵ Within cognitive social psychology it is common to see man as struggling for consonance between the attitude components as well as between his attitudes and different types of action.²⁶ Still, Emin Tengström (1993, p. 121) has argued that: "... as long as most car users do not associate their own Mobility with the problems of automobility, they will be a fundamental obstacle to the realization of transport demand management (TDM)."

Attitudes should be distinguished from values.²⁷ In practice, *attitudes* usually refer to rather specific phenomena. Attitudes are easily affected by new information, or by suddenly intense mass media coverage, of a subject. Thus, they are rather changeable over time.²⁸ *Values* denote: "... deeply rooted conceptions about a set of phenomena."²⁹

It is appropriate to ask: Why should environmental attitudes and values be studied? What role do they play for our actions? The most obvious reason that so many research projects get funding for studying environmental attitudes ought to be that it is assumed that attitudes and behavior/action interrelate in ways that we need to understand. And, indeed, the day when we fully understand the gaps between -- on the one hand, what we say that we find important, and, on the other hand, how we in practice treat this as important, we will have a more solid base for modifying policies.

Attitude research has taught us that learning about people's attitudes is a problematic way of learning about people's actions. The variability of attitudes often cause them to go out of phase with action. In addition, it is often difficult to ask people about their attitudes at the correct level. Attitude researchers agree that it is key to ask about specific attitudes towards specific ideas, phenomena and actions.³⁰ The more specific, the better. In order to get congruence between attitudes and action, it is often not sufficient to choose a specific topic, such as: *How important do you find*

²⁵See Secord P.F. & Backman C.W. (1964, p. 97).

²⁶Central for this reasoning is Leon Festinger's (1957). *Theory of Cognitive Dissonance*. The theory has through the years been applied to a multitude of social psychological areas, and is also highly relevant for analyses of environmental action, motives and attitudes. In this theory, Festinger assumes that people generally are trying to achieve consistency between attitudes and actions. If we do not regard ourselves as consistent, this results in dissonance, a term that he prefers to the too logically-sounding *inconsistency*. In order to reduce dissonance, people have two main alternatives: We can a). modify our actions. But if we choose to continue to perform the old action, we may have to b). modify the cognitive part of the attitude in the motives that are related to the environmental action. This can be done by adding new cognitive elements and/or changing present elements. Applied to our example with automobile ownership, this can be done by giving attention to new motives for owning one's own car. See Zajonc R B (1968).

²⁷Here, *values* is not used as "opposites" of facts or as emotion.

²⁸Hackett, P. (1995); Lindén, A-L (1994).

²⁹Lindén, A-L (1997, p. 4). She here refers to Hackett (1995).

³⁰Ajzen, I. & Fishbein, M. (1980).

it to try to use transportation alternatives to the automobile on an everyday basis? The result would probably be rather flat here, with almost everyone finding it *important* or *very important*. And as soon as we go out and count the cars and drivers, we see a big discrepancy. This ought to make the researcher focus more on specifics, such as the lifestyles and social realities of the interviewees. Once we have moved to the everyday sphere and seek to understand local circumstances, we will find closer correspondence between attitudes and action. Moreover, the fallacy of assuming that environmentally beneficial action easily can be derived only from concern for the environment can be thus avoided. Just as a certain environmentally related action may have several environmental outcomes, environmental actions tend to have at their basis complex patterns of experiences, motives and values. This basis has many faces in the everyday life: social, economic, cultural, practical, environmental, etc.³¹

To learn about human values is also of interest to environmental sociology. But studies of values are of quite different applicability than is attitude studies. Thus, they should not be confused. The relative stability of values can help us get pictures of how trends and value-orientation change over longer periods.³² The more general and abstract character of environmental values than of attitudes makes it appropriate to study values in relation to larger patterns of actions, over longer time spans and at larger societal levels, such as, for example, *the modern urban way of life*.³³

It is often interesting to compare people's attitudes with what politicians think are people's attitudes. As Tengström (1993) maintains, "... it cannot be totally excluded that the voters are more flexible in their attitudes than most political actors assume." In an attitude survey involving 12 EC-countries from 1991, it was shown that 84% of the 13,149 people surveyed answered that they wanted their policy makers to give priority to public transport "... at the cost of the private car (Tengström, *ibid.*)". By comparison, only 49% of the policy makers thought that this would be the outcome of the attitude survey. The others thought that the public was in favor of giving priority to the private car (Brög 1992). As we have learned, however, fairly general attitudes like the one above should not be directly interpreted into the claim that a vast majority has strong intentions of changing their personal travel behavior. We know that each individual car user would gain from other car users changing to mass transit. Still, there are no grounds for making the opposite claim either. The bottom line is that a far more open dialogue is needed between policy makers and the public on rather specific, concrete and personal travel issues. The social and behavioral sciences may have much to contribute towards a greater understanding between these different actors.

Social Dilemmas

The concept of Social Dilemmas³⁴ is tied to issues of action and attitudes. The key principle of a social dilemma situation is where individuals gain from not paying attention to other people's (or living organisms') well being, while the collective of

³¹ Klintman, M. (1997c).

³² Lindén, A-L (1997, p. 4).

³³ Klintman, M. (1997c).

³⁴ Dawes, R.M. (1980).

living organisms is advantaged if everyone does not collaborate. One kind of social dilemma is especially close to our case of transport behavior and alternatives to private car use for most trips: "the Social Trap." Here the time component makes the individualist choice even more tempting. In this case, the individual gain is direct in time, while the negative collective consequences are more distanced in time. The dilemma gets even more complicated by the diffusion of environmental and health risks in space.³⁵ This in turn makes it difficult to assess who is responsible for these risks, and how the risks are reduced by the single individual changing her travel behavior in an environmentally positive way.³⁶ There is a risk of the individual feeling that her changes in behavior are rather pointless if she thinks that she is one among very few who have changed their behavior.

Social Hopes

Still, there are several social aspects that point in a more environmentally hopeful direction.

Firstly, environmentally-related action in the *private realm* (i.e. among individuals and households) does not always have to be tied to a social dilemma. The extent to which an environmental action is part of a social dilemma depends largely upon how well the action is supported by social and physical structures (as in 2.2.1). A thesis in this paper is that proper traffic policies, regulations, organization, and pricing systems can for some groups make carsharing both economical and time efficient compared with private car ownership and use. In addition, the increased public environmental involvement in the eighties and nineties³⁷ shows that people's rationality may go beyond the individualist calculations of costs and benefits. Ecological rationality³⁸ is a term that stands for broader consideration directed towards other people and organisms, the places and future.

Moreover, people in modern urban society participate various social groups where knowledge and experiences are exchanged on issues of transport and environment. Here ideas of new ways of traveling, such as carsharing, may be spread. Carsharing has a strong local component, and is often connected to a specific residential area or city center. Knowledge and experiences shared between acquaintances on a local basis often seem more trustworthy and action-generating than shared on a more impersonal level.³⁹ A common organizational form of carsharing are the *cooperatives*. These are based on *cooperation*, which has been defined as:

... acting together, in a coordinated way at work, leisure, or in social relationships, in the pursuit of shared goals, the enjoyment of the joint activity, or simply furthering the relationship.⁴⁰

³⁵ Beck, U. (1986/1992)

³⁶ Klintman, M. (1995).

³⁷ Bennulf, M. (1994).

³⁸ Dryzek, J.D. (1987).

³⁹ McGuire, W. J. (1985).

⁴⁰ Argyle, M. (1991, p. 4).

Decisions in a carsharing cooperative are made in a social setting where the members are involved and actively participate towards a common goal – an organization that works. Cooperatives are in our context a certain form of economic organization, owned by the members themselves. Among members there are commonly a few “fiery spirits” that may act as models for the others and keep the enthusiasm up. Social influence is also exercised through social norms and social pressure towards collaboration.⁴¹ In addition to this “internal feedback,” it is often much easier for a cooperative with a common project to get “external feed-back” on their ideas and goals from local governments than it is for single individuals. Theoretically we can talk about possibilities of influence from the organizational level to the structural, public realm.⁴² These may all (in the ideal case) create a social motive, in addition to the motives of saving money, time and the environment. The social motive can make us look at our other motives and priorities a bit differently than had we acted if we acted isolated from others. These theoretical aspects will all lead to empirical questions about carsharing organizations and their varying degree of success.

2.3.3 The Importance of Ownership – a Few Sociological and Social Psychological Perspectives

The issue of preconditions for carsharing and cooperation raises the question of whether private ownership is intrinsically important to many automobile users. Much literature has examined the cultural roles and meanings of the car in our society. It is common knowledge that the automobile has ever since its “birth” been a strong social marker. To own a car has long been a way of telling others one’s social and economic position. The concept of *conspicuous consumption* applied to car ownership particularly in the early days, when everyday urban life was not practically dependent upon the car.⁴³ Today, when the majority of adults in Northern Europe own a car, different models are used to distinguish the rich from the poor. The phenomenon of carsharing puts the car as a status symbol in a completely new perspective. One can speculate whether membership in a carsharing organization can now be used as a reversed status marker, when so many people own cars of “good models” and conditions? What status signals does this membership send out to the social environment? An empirical analysis of the demography of carsharing is needed here.

Aside from the status aspect, the automobile is often said to be a symbol of freedom and individualism. A German anthropologist has described the automobile as an intermediary between different parts of our lifestyles, roles, spaces and times. In the car we change our costumes and roles between the different social settings in which we participate. In the car one feels a distance that many people seem to appreciate.⁴⁴ Emin Tengström claims that the automobile holds “...a number of culturally determined social and symbolic functions”⁴⁵ which go far beyond the needs of transport. In contrast to those who stress cultural meanings and modern people’s love

⁴¹ Moscovici, S. (1985).

⁴² Klintman, M. (1996).

⁴³ For a classical analysis of conspicuous consumption, see Veblen, T. (1899/1979).

⁴⁴ Steffen, K. (1990, pp. 14-15); Hagman, O. & Tengström, E. (1991).

⁴⁵ Hagman, O. & Tengström, E. (1991).

affair with the car, one finds the “transport functionalists,” who hold (regarding Americans and automobility) that :

Americans love their automobiles about as much as they love their microwave ovens. They have them and use them because they are very efficient tools—they are timesaving devices.⁴⁶

It may be that the meaning of the automobile varies between different nations and regions, based on, among other things, automobile dependency and structural support for travel alternatives. In the U.S. the automobile may have the same value for some people as the microwave oven; in some Eastern European countries, however, an enormous increase in automobile consumption is taking place despite the fact that many households spend the largest part of their modest incomes on the car, while public transportation in these regions often are quite excellent. This may be a sign of a strong symbolic value of the automobile in these countries.⁴⁷ In conclusion, we hold that one love affair is inevitable – the one with *mobility and access*. The high level of car ownership in the whole Western world, even in places with well-developed alternatives, makes it important to also look for motives outside of travel functionality:

A political strategy to reduce the role of the car in transportation must therefore, in my view, also pay attention to the cultural aspects of car use and find ways to compensate the car-users for vast social and cultural losses in a less car-dependent future.⁴⁸

Paying attention to cultural aspects and lifestyle factors is critical in order to understand obstacles to carsharing and public transport. Certain obstacles may require measures other than merely making alternatives to private car ownership more time- and money efficient.

⁴⁶ Pisarski, A.E. (prep. 1996, chap. 3).

⁴⁷ Klintman, M. (1997).

⁴⁸ Tengström, E. (1993).

3. The Development of a Carsharing Movement

3.1 Some Basic Differences between Carsharing and Carpooling

The ideology of automobile complementarity, and its practical manifestation, carsharing, differ in certain ways from other ideas and practices (e.g. carpooling/vanpooling/ridesharing) aimed at reducing traffic induced problems.

3.1.1 Carsharing is in its organized forms rather young

Among the earliest implementations of the carsharing idea, two projects can be mentioned: PROCOTIP in Montpellier (1971-73), WITCAR (1973-81) in Amsterdam.⁴⁹ The earliest example that we have found of long-lived formal carsharing is in the city of Örebro in Sweden, where a car cooperative named Vivalla Bil has operated since 1983.⁵⁰ It is a small cooperative with around thirty households sharing five automobiles.⁵¹ Our earliest North American example comes from the U.S.: Short-Term Auto Rental (STAR), which was established in San Francisco in 1983. It was a project that involved a lot of hope and ambition, and it also got considerable attention in the nation's largest newspapers and TV-stations.⁵² Yet while STAR was a success according to consumers, it rose financial question marks and had problems of meeting its societal and Mobility goals.⁵³ Consequently, the project ended after one and a half years (until 1985) instead of after the three years planned.⁵⁴

The most well known carsharing organization today is STATTAUTO. This organization was initiated in Berlin in 1988 by "ordinary" citizens. Here two brothers and students, Markus and Carsten Petersen, along with a few friends, started to share the responsibilities, expenses and use of one car. The interest in STATTAUTO started to grow steadily in the first half of the '90s as an alternative to private car ownership. By 1995, STATTAUTO had as many as 4,000 participants, and today (1997) it is still growing.⁵⁵ STATTAUTO will be analyzed more in depth in a later chapter.

⁴⁹ See Petersen, M. (1995).

⁵⁰ *Vivalla Bil - Fullskaleförsök med bilandelsförening*. TFB-rapport 1984:30. Stockholm, Sweden. It should be added that we may have missed carsharing projects in countries or regions that has not been included in the library data bases that we have had access to. There could also very well exist reports on carsharing written in languages that we do not master. The contents of such reports we have unfortunately not been able to identify.

⁵¹ Hille, J. (1993).

⁵² E.g. Wall Street Journal (8-1-84), feature article on page 1 of second section, "Car-Sharing Experiment in San Francisco Promises to Trim Auto Use and Expenses," by staff reporter Scott D. Schuk.

⁵³ Walb, C. & Loudon, W. (1986).

⁵⁴ <http://members.aol.com/CarSharing/wagkat.html> (970911)

⁵⁵ <http://members.aol.com/CarSharing/wagkat.html> (970911)

3.1.2. "Ordinary" Citizens are commonly involved when Carsharing organizations are initiated

STATTAUTO is only one example of carsharing organizations initiated by citizens, and it is today one of the largest ones. It is also rather common that CSO:s are initiated on a local or neighborhood basis by citizens together with a research agency and/or a non-governmental organization (NGO). The car cooperative "Vivalla Bil", mentioned earlier, was initiated together with (among other agencies) a traffic research institute in Sweden (Transport Research Board, TFB).

In contrast, organized carpooling (ridesharing), e.g. in the U.S., has to a considerable extent been initiated and stimulated on a "top-down" policy basis and often on a larger scale. One example is highways with special (usually less congested) carpool lanes; another example is the Clean Air Act Amendments of 1990 in the U.S., which required employers of 100 workers or more to organize an employee travel modification programs (although this law was changed by Congress in 1995). Furthermore, efforts that have been made to stimulate ridesharing include transit subsidies, carpool demonstration programs, vanpool marketing, and implementation demonstration programs. In addition, Transportation Demand Management has included strategies such as financial/time incentives (with for instance preferential parking for ridesharers), guaranteed ride home programs for car-poolers, etc.⁵⁶

Carsharing, on the other hand, has so far not been tied to any large-scale policy decisions, special requirements or permissions. When public agencies or local governments have taken part in, or even sponsored carsharing projects, it has so far been out of interest in the projects as limited experiments. This "Scientific curiosity," as opposed to regarding carsharing as relevant for public policy, may be a sign of carsharing's youth. In other words, carsharing has yet not become part of society's larger institutionalization.

3.1.3. Carsharing organizations have not emerged from an awareness of suddenly acute societal problems

In contrast with the rather sudden policy efforts to increase carpooling during the two large oil crises in the 70s and 80s⁵⁷, carsharing organizations have emerged from a growing awareness of the negative side effects of excessive car use. Many of these negative side effects are the same ones that have motivated the establishment of organized carpooling schemes. But the latter have to a larger extent also been affected by sudden crises and abrupt changes in gas price. The common societal interests behind the two alternatives are to reduce the number of cars on the roads, congestion, parking problems, noise and pollution. Carsharing also addresses problems caused by the huge amounts of energy resources needed *to produce* a car.⁵⁸ This is not all that obvious with carpooling, since carpooling households may very well own more than one automobile, although they try to use them for less than all trips. Moreover, a related argument for carsharing organizations is that each car used in a carsharing

⁵⁶ From Klintman, M. (1997). He here refers to "Overview of Travel Demand Management Measures (Jan. 1994)."

⁵⁷ Bonsall, P. W. (1979, p. 2).

⁵⁸ Berge, G. (1997).

organization will run more miles per year than private-owned cars that are only used now and then. Carsharing is therefore likely to lead to a more frequent renewal of the automobile park, with newer, safer, and more environmentally adapted automobiles.⁵⁹

3.2 The Present Carsharing Situation and Development

We have already noted that the majority of today's carsharing movement and its formal organizations are fairly young – less than two decades old. A few words can be said about knowledge about the carsharing situation in Europe and North America. It has been rather difficult to collect data on how common carsharing is in the countries of this study, as little research has been done on the total activity. One reason is that car cooperatives, for instance, are usually economic associations, which are often not economically active (i.e. have people employed and/or pay value-added tax), making them difficult to trace. Also, it is possible that carsharing is partly embedded in the practices of tenant-owners' associations, something that usually does not exist in any common register. Nevertheless, some important data have been found.

3.2.1 Carsharing in Europe

The European Car Sharing Association (ECS)

Due to the steadily growing number of carsharers everyday, the organizers at STATTAUTO founded the European Car Sharing Association (ECS) in 1992. One purpose of the association is to coordinate the information between Carsharing organizations in different countries, and to help local CSO:s cooperate across country borders. So far quite extensive cooperation is becoming reality; each member of a CSO, which in turn is a member of ECS, has access to every other similar CSO in Europe:

The vision to take the train from Zürich to Berlin and have 'your' shared car waiting at a Berlin central train station is no longer merely a vision. You simply have to order the car at your 'home car sharing'-organisation and they will arrange for it at the other end of your train journey.⁶⁰

A discussion of the different implications, including environmental ones, will follow below. For now we might only mention that 36,000 carsharers in 350 Western European cities are presently members in the 34 organizations which belong to ECS. The center of ECS is in Bremen, Germany.⁶¹ The countries represented in ECS are (today) Germany, Switzerland, Austria, Netherlands and Sweden.⁶² Denmark is about to become represented. There are also carsharing organizations outside of these five countries, for example in Norway.

Regarding large umbrella associations like ECS, it is interesting to examine the criteria for becoming a member organization. One criterion is that member

⁵⁹ Berge, G. (1997).

⁶⁰ <http://www.epe.be/epe/sourcebook/3.19.html>, from 970911.

⁶¹ From an interview (971124) with Joachim Schwarz at ECS, in Bremen, Germany.

⁶² <http://www.STATTAUTO.de/ECS.html>

organizations not provide more than one vehicle for every 10 members. Another criterion is that the rates for car use be higher than the costs for similar trips by mass transit. These are held to be environmentally based requirements, but they also provide room for a certain profit and reinvestment. A social and organizational requirement is that of member participation in decision-making.⁶³ ECS is claimed to be highly decentralized: "a network of neighbourhood-based groups that reaches across cities and countries."⁶⁴

Still another suggestion concerns profit. This is what one ECS-spokesperson says about profit:

Carsharing groups set the pricing of their services to cover overhead and are not expected to earn any profit. Although the ECS-affiliated groups have tightly controlled finances, social and ecological objectives must come before economic ones.⁶⁵

Although this is a noble rule, it involves a conflict with another goal of ECS: to stimulate increase in carsharing. With no profit it may be difficult for the organizations to grow, to invest in more cars and stations. Consequently, this has led to the following recommendation:

It seems as though [carsharing organizations] CSO should have some profit orientation in order to take risks and go for fast growth. You should have the highest possible rate of bookings that the economy of the systems is able to cover. The bigger a system is, the more you can get high occupancy, high booking and security at the same time. So start as big as you can and grow as fast as you can.⁶⁶

All CSO:s do not agree on this, however. We have found that Scandinavian car co-ops are more inclined to operate on a completely non-profit basis, as is shown in another quote.

When searching for data for this report, it was striking to find how much of the material was arranged under ECS. That triggers the question of whether or not there exist rather well-developed, smaller carsharing organizations that are difficult to find for someone who does not live in the cities or towns of these organizations. In chapter two we will examine CSO:s which are not (yet) part of ECS. But first, we will take a brief look at a few European countries.

Some European Countries

Germany is the most active country regarding the number of different carsharing organizations in Europe. However, it is difficult to learn exactly how many there are. The same organization may have more than one name in different cities or regions. In Germany there are at least 30 carsharing organizations at almost 140 addresses in cities all around the country.⁶⁷ In the Berlin area carsharing has been the most

⁶³ <http://www.flora.org/afo/afz/issue9-II.html>, 970911.

⁶⁴ <http://www.flora.org/afo/afz/issue9-II.html>, 970911.

⁶⁵ <http://www.flora.org/afo/afz/issue9-II.html>, 970911.

⁶⁶ From an interview (971124) with Joachim Schwarz at ECS, in Bremen, Germany.

⁶⁷ See <http://www.inkassel.com/STATTAUTO/i2000201.htm> (created 970912) for a list of carsharing addresses in Germany. There are probably more addresses, but 140 were found on this webpage.

developed, with 14 lots assigned for STATTAUTO alone.⁶⁸ It should be noted that Germany is the most car dense country in Europe.⁶⁹

Switzerland has more than 136 cities and towns with organized carsharing. The number of carsharing stations is at the moment the highest in the world – 350.⁷⁰ In Switzerland the number of users is presently almost 20,000, and is continuously increasing.⁷¹ Yet most of the local carsharing addresses spread out over Switzerland have been merged into the “umbrella organization” called *MOBILITY* since 1997. Before this fusion there had been three large organizations dominating the Swiss carsharing scene: a) ATG - AutoTeilet Genossenschaft, with more than 6000 members⁷², b) ShareCom, c) and CarSharing Company CSC.⁷³ This centralized tendency, as well as the very efficient spread of carsharing to many local areas, may be a sign of a few “fiery spirits.”

Austria has organized carsharing in at least eleven local areas. All eleven clubs that we could find belong to the international organization called AutoTeilen.⁷⁴ By the end of 1994 the number of CSO users was 198, a number that is growing rapidly.⁷⁵ The **Netherlands** has five main organizations, each in different cities.⁷⁶ The largest one is AutoDelen, which is the same organization as AutoTeilen in Austria. This mother organization has 150 carsharing stations in Europe.⁷⁷ In 1995 the Netherlands had about 2000 members, and the number is increasing rapidly. There are estimations of a membership rate of 50,000 in privately initiated carsharing.⁷⁸ The number of CSO:s is approx. 35, spread out over 500 locations.⁷⁹

In **Norway**, the carsharing organizations (yet) are not members of ECS. Nevertheless test projects are planned and have been initiated in several cities and towns. The Market and media institute (MMI) in Norway conducted a survey on the attitudes towards carsharing. 20 % of households with a car said that they would be interested in taking part of carsharing. Among households without an automobile, 40% said that they would be interested.⁸⁰ If all the people that claimed this interest actually became members, the number of cars on the Norwegian roads would be reduced considerably. Still, we must keep in mind the fallacy of directly translating attitudes into behavior change (see the theory chapter). The associations Green Working Life (Grønt Arbeidsliv) have been organizing pilot projects with carsharing through cooperation with car rental agencies. The Future in our hands (Framtiden i våre hender) has organized “the Car Cooperative,” which we will examine in the next

⁶⁸ <http://www.STATTAUTO.de/Idee.html> (created 970901).

⁶⁹ Pisarski, A.E. (prep. 1996).

⁷⁰ <http://www.Mobility.ch/links.htm> (created 970901)

⁷¹ From an e-mail (970616) from Conrad Wagner, Switzerland: balance@balanceMobility.com. Conrad Wagner has extended the simple idea of “car on call” into the new slogan “Mobility on call.” He has also created the broader concept of a comprehensive Mobility center. He is the president of ATG Auto Teilet Genossenschaft and active manager of Balance Services AG, a company that does international work in Mobility, research, consulting, and marketing.

⁷² ATG was founded in 1987 in Lucerne. In 1990, the membership was 280. In 1994 it had increased to 2500, and in 1996 it was more than 6000. See <http://members.aol.com/CarSharing/wagkat.html> (970911)

⁷³ <http://www.inkassel.com/STATTAUTO/i2000202.htm> (created 970912).

⁷⁴ <http://www.inkassel.com/STATTAUTO/i2000202.htm> (created 970912)

⁷⁵ Steininger, 1996.

⁷⁶ <http://www.inkassel.com/STATTAUTO/i2000202.htm> (created 970912)

⁷⁷ <http://www.sime.com/autoteilen/> (created 970912)

⁷⁸ Evaluatieprogramma de Deelauto in Nederland (June, 1997)

⁷⁹ From an interview with Roger Theunissen, manager of the CSO Deelauto: deelauto@icns.nl.

⁸⁰ Hille, J. (1993).

chapter.⁸¹ One should note that these two projects are further examples of carsharing in cooperation between local housing areas and NGO:s, with research agencies involved (in this case the Institute of Transport Economics).

Sweden has separate carsharing organizations in, for example, Örebro (Vivalla Bil, mentioned earlier), Gothenburg (MAJORNAS BILKOOOPERATIV, Bagaregårdens och Rannebergens Bilkoooperativ)⁸², and Österfärnebo. MAJORNAS BILKOOOPERATIV will be given extra attention in the next chapter. In Stockholm, a project called "Car cooperatives in Stockholm" (Bilkoooperativ i Stockholm) was started in the winter of 1996/97. The aim was to survey the interest in carsharing in Stockholm, and to help organizations get started. Funding comes from the environmental fund of Agenda 21 in the municipality of Stockholm, Kretsloppsföreningen and Swedish public utility housing organization (AB Svenska Bostäder). A random sample of 6227 households in AB Svenska Bostäder have been invited to attend information meetings on carsharing. After these meetings, a bit more than 1 % claimed to be very interesting in joining a carsharing group, which, although it seems like a low share, is sufficient for starting a CSO. This has led to the planning of a carsharing organization in the southern part of Stockholm.⁸³ There are already other organizations running, e.g. in Björkhagen, Stockholm. It may very well be that far more people will become interested in joining the CSO once it has proven that it works, and once acquaintances spread the news. Magnus Pettersson⁸⁴ maintains that Swedish interest in general is growing rapidly and that the total number of participants will have increased by three or four times before the year 2000.

3.2.2 Carsharing in the U.S. and Canada

In North America the carsharing movement has so far been less strong than in Europe. We have found only a few examples of carsharing organizations that are active at present. One organization is in the San Francisco Bay area (the cOgO car-sharing club, developed by J. Willemssen and P. Fleming).⁸⁵ It is modelled after STATTAUTO in Germany. The idea of the club is that its group nature will encourage shared use, which in turn is supposed to optimize the use of automobiles and minimize the adverse effects of cars on the environment. The program is also said to substantially alleviate the financial burden of car ownership for the members. Another example is in Southeast Portland, Oregon, where CarSharing Portland, Incorporated has three carsharing stations in the city.⁸⁶ This carsharing organization was initiated in cooperation with the large Swiss carsharing organization *MOBILITY*. The same is true in Canada, with Victoria CarShare Co-op in BC.⁸⁷ Another Canadian organization is Cooperative Auto Network in Vancouver, BC.⁸⁸ Two rather successful

⁸¹ Berge, G. & Aall, C. (1994).

⁸² Some other small car coops in the Gothenburg region are: Hisingens bilkooperativ (under development), Bilkoooperativet volvamus, Brännö bilpool, Floda bilpool (under development).

⁸³ After a discussion with Michel Gabrielsson, project leader of Green Motorists (Gröna Bilister) in Stockholm: (michel.gabrielsson@stockholm.mail.telia.com)

⁸⁴ From an e-mail interview (971123) with Magnus Pettersson. M P is working at the Dep. of Statistics, Gothenburg University, and is very involved in carsharing in Gothenburg.

⁸⁵ Email jwillemssen@well.com

⁸⁶ <http://members.aol.com/CarSharing/map.html> (Modified 971117)

⁸⁷ <http://vuv.com/~carshare/>

⁸⁸ <http://www.axionet.com/think/can/index.html>

CSO:s in Canada are AutoCom in Quebec City and CommunAuto in Montreal with 170 and 40 members respectively.⁸⁹

MOBILITY is also looking into the possibility of starting carsharing in a place world-famous for its traffic problems and pollution: the Los Angeles area in California.⁹⁰

Although there are more examples, the carsharing movement in the U.S. is so far a rather modest one. We can speculate about why this is so. One reason could be that carsharing presupposes a well-developed public transport system, to which carsharing can become a sufficient complement. In most U.S. cities the public transport systems are simply not developed enough, and most people can not rely on them for their daily trips. The physical structures of American cities are largely planned for private automobiles. Moreover, public subsidies for mass transit have been lower in the U.S. compared to Europe. There are also large differences between Europe and the U.S. regarding private expenses for private car ownership and use; it is much more expensive to own and use a private automobile in Europe than in the U.S., where it is to a larger degree subsidized by the government.⁹¹ Researchers have studied *hidden auto costs*, which are hidden in the sense that individual drivers do not cover them on a direct basis. These costs are rarely connected to automobile use in the public debate.⁹² Purchase of land, policing, road construction and maintenance are all in part financed by government subsidies to drivers. To be exact, 38% of these expenses were taken from the pocket of the government, that is \$114 billion in 1990.⁹³ Many relevant societal costs are not included. The harmful effect on public health by auto pollution falls outside of these expenses, as do the costs of auto based accidents. These expenses are distributed through increases in public and private insurance premiums among the population. Furthermore, there are external costs for car driving, such as air pollution, noise, vibration damage, congestion and public costs for traffic accidents.⁹⁴ When researchers have tried to quantify the social and environmental damage caused by automobile use, the result has been at least \$300 billion per year in the U.S. These expenses can be translated into \$2,400 per automobile, which is not paid for by the private car users.⁹⁵ It is plausible to conclude that if a larger share of these hidden costs were unveiled and were to be covered directly by the individual driver, we could expect a considerable transition from solo driving to public transit and carpooling, perhaps with carsharing as a complement.⁹⁶

⁸⁹ <http://members.aol.com/CarSharing/wagkat.html> (970911)

⁹⁰ From an e-mail (970616) from Conrad Wagner, head of Balance Services Inc. Switzerland: balance@balanceMobility.com

⁹¹ Pucher, J. (1994, p. 11).

⁹² See Freund, P. and Martin, G. (1993, pp. 130-131). Total roadway user taxes per motor vehicle were \$234 in the U.S. in 1989, while it amounted to all from \$786 in Western Germany and to \$2,323 in Finland. Gasoline tax per liter averages around five times more in Europe than in the U.S. The gasoline prices in Europe are two to four times as high. In addition the sales tax rate on cars are much higher in the U.S. than in all European countries except Switzerland. Pucher, J. (1994, pp. 2-3).

⁹³ Freund, P. and Martin, G. (1993, pp. 130-131).

⁹⁴ Ketcham, B. (1992, p. 4).

⁹⁵ MacKenzei, J., Dower, R. & Chen, D. (1992, pp 1-6).

⁹⁶ However, it can also be argued that private automobile use, especially solo driving, also involves social benefits. Instant access to health care in case of an emergency is the least controversial example. Some people consider single family living and access to employment far away from home important social benefits. Critical voices have concluded that the automobile based physical structure has led to more social harm – i.e. social segregation, urban centers with little social contact, and so far unequal access for different groups to vehicles – undemocratic Mobility. See for example Freund, P. and Martin, G. (1993).

A last possible reason for the more developed carsharing movement in Europe than in the U.S. can be ascribed to the stronger cooperative tradition in Europe:

Comparing the relative strength of consumer cooperation in different countries, the greatest contrast is seen to occur between the old (European) developed countries where cooperatives are strong and the underdeveloped and the new developed countries, such as the United States, Canada, and Australia, where cooperatives are weak.⁹⁷

The weakness of American consumer cooperation is partly due to the "efficiency of capitalist retail management" in the U.S., Cooperatives are most easily found in university areas, where the students are members.⁹⁸

The strategy of trying to introduce carsharing in the U.S. has produced similar examples across different kinds of urban areas. Some urban differences that they consider interesting to compare are: city size, physical environments and what partners are involved. The goal is not to increase the number of users very quickly within the first half year, but instead to learn from successes and mistakes.⁹⁹

3.2.3 The Market Potential of Carsharing

The market segment potential for local "pioneers" has been calculated in Graz, Austria. In an "average" urban residential area in Graz, the pioneer potential ranged from 8.8% to 17.7%; in a residential area with a large share of people with post secondary education, potential ranged between 16.0% and 37.6%. The lowest thinkable potential, 8.8% would lead to a total mileage reduction of at least 2.7%, and considerably more than a 4.5% reduction of the number of automobiles in Graz.¹⁰⁰ In Switzerland, the "theoretical" potential of carsharers has been estimated to 12.4% of the whole Swiss population.¹⁰¹ In that report, local areas with more than 500 citizens were taken into account.¹⁰² In a study of the German carsharing potential, 3% of the total population were held to fall within the category of potential carsharers in urban areas (2.45 million drivers).¹⁰³

All these estimations are of course very approximate. They are based on the discernible characteristics of present carsharers, as if the preconditions would not get better for carsharing. As we could see in the Austrian study, the potential varies considerably between local residential areas. In the next chapter, we will try to identify the most critical variables for a higher carsharing propensity. As a basis for that search, we are going to use the reasoning from the theoretical section on Comprehensive Environmental Action. Carsharing will also be treated as an "innovation" which implies certain ways of spreading to broader social segments in the population.

⁹⁷ Encyclopedia of Sociology, pp. 394-95. By P. Sargant Florence. (1992)

⁹⁸ Encyclopedia of Sociology, pp. 394-95. By P. Sargant Florence. (1992)

⁹⁹ From an e-mail sent from Conrad Wagner (970617) Wagner is the founder of Mobility, Mühlenplatz 10, CH-6000 Luzern 5.

¹⁰⁰ Steininger, K. et al. (1996).

¹⁰¹ Muheim & Inderbitzin, 1992.

¹⁰² As we will see later, this may be appropriate, since Switzerland has a rather well developed public transit system also in less populated areas.

¹⁰³ Baum & Pesch, 1994.

4. A Closer Look at Some Carsharing Organizations and Their Members

In this section we shall move from the overall situation of the carsharing movement to what is done *within* particular carsharing organizations. One aim is to find features unique to some organizations; another is to map out features that the organizations seem to have in common.

The organizations examined the most here are: *BILKOLLEKTIVET* in Oslo, Norway, *STATTAUTO* in Berlin, Germany, *MOBILITY* in Switzerland, and *MAJORNAS BILKOOOPERATIV* in Gothenburg, Sweden. Some further comparisons are made with organizations in Austria and the U.S. Few strict (i.e. multiple regression) comparisons have been made between the organizations. In most of the cases data of more than one CSO are used in order to provide a fuller, although preliminary picture. Since this is an exploratory study, the idea is that the results might reveal a tendency which can be scrutinized further in subsequent, more specialized, studies.

The term "successful" carsharing is fairly common in this part of the report. There are a few different, sometimes contradictory, ways in which carsharing organizations can be regarded as "successful." A few of them were implied in the theory chapter. To talk in terms of *environmentally* successful carsharing presupposes an analysis of the travel histories, as well as an estimation of travel futures, of the members. One key issue is: do the members travel more environmentally soundly than they did before, or than they would have had they not become members? "Environmentally successful" demonstrates the relativity of environmental impact.

The success of carsharing can also be *organizational* success. Is carsharing made convenient for the participants, without too much paperwork and complicated economic policies? Are the members' suggestions of modifications taken into account? Is the club run at a low cost?

A third type of success concerns the *size and/or growth* of the organization. It could be asked: Should a carsharing club be called successful as soon as it has a large and ever-increasing number of members? The European Carsharing Association (ECS) apparently does not believe so. One of their requirements for their member organizations is that the tariff for sharing a car be higher than tickets for two adults with public transportation.¹⁰⁴ This requirement may lead to a less dramatically increase in the number of participants than would be the case if carsharing were made simply as cheap as possible. Here environmental success is considered more important than success in growth. We will nevertheless refer to "success" in terms of increase in membership several times, since the organizations analyzed all seem to meet the requirements made by ECS.

¹⁰⁴ ESC – Charta of Ecological Standards, written (960122).

4.1 Transport and Mobility

A few of the questions dealt with in this section are:

- What kinds of areas are most likely to develop carsharing - smaller towns or bigger cities? (How dependent is the success of carsharing organizations upon a very developed public transport system?)
- What other important factors can be identified: high parking costs? A low number of parking spaces downtown? Have any attempts been made to turn these factors into possibilities for carsharing?
- What importance does the location of carsharing stations have – whether they are, for instance, placed downtown, or close to a large neighborhood?

4.1.1 Urban Areas, Public Transport, and the Potential for Success

As one could see in the theory chapter, changes in travel behavior and travel habits are rather comprehensive environmental practices. They are also highly dependent upon support from physical and social structures. This makes the first question – “what kinds of areas are most likely to develop carsharing” – difficult to answer separately. People working within the five CSO:s all agree that dense, urban areas, such as Berlin, Zurich and Amsterdam, generally have the highest propensity for developing more than marginal carsharing. Still, the variable *urban-rural* is only of secondary importance. The crucial thing is that successful carsharing presupposes well-developed public transit, and well-developed public transit is more frequent in dense, urban areas:

- What kinds of urban areas are most likely to succeed - smaller towns or bigger cities?
- Probably bigger cities because of the better public transportation systems.
- Is the success of carsharing organizations highly dependent upon a very well dependent public transport system in the urban area?
- Yes.¹⁰⁵

Thus, people working with STATTAUTO find an already existing, efficient public transportation system necessary for starting a carsharing club in the area.¹⁰⁶ It is also clear that local carsharing clubs remain highly dependent upon the whole transportation system. The success of carsharing cannot be estimated without estimating the success of public transport:

It is difficult to predict whether car-sharing will be able to substitute a major share of our individual car ownership, since the success of this concept depends strongly on the overall (public) transport situation, which again depends to a great extent on political decisions.¹⁰⁷

¹⁰⁵ Interview (970919) with Peter Markusson, Car cooperative MAJORNA, in Gothenburg, Sweden.

¹⁰⁶ From RAIN Magazine, Summer 1994.

¹⁰⁷ <http://www.epe.be/epe/sourcebook/3.18.html>, from 970911.

At the Eugene Coop in Oregon they recommend that carsharing organizations involve public transit as a membership benefit:

Include bus passes, transit discounts and bike sharing in membership benefits. Make promoting alternative modes an important component of your organization, as well as make reducing the number of cars in your city a primary goal.¹⁰⁸

This could help provide potential members with a more complete picture of how to replace private car ownership with its alternatives; it leads to a focus on Mobility as a whole rather than merely on automobility. And if carsharing keeps growing, this support to the public transit system may be crucial for further improvements of public transit.

The efficiency of public transport systems varies a lot between different regions of Europe, with consequences for carsharing. In little Switzerland, the type of infrastructure functions well enough to enable carsharing to work also in less densely populated areas. Germany, on the other hand, with less developed public transport in non-urban areas, has concentrated its carsharing successes to places that are densely populated.¹⁰⁹ At MAJORNAS BILKOOOPERATIV in Sweden, they stress that some of the most sparsely populated areas require their inhabitants to own private automobiles in order not to become isolated. But MAJORNAS BILKOOOPERATIV also points out that carsharing is not necessarily limited to large cities:

In Sweden there are big areas of low population density in which the car is a matter of survival. However, most people live in bigger or smaller towns, where lots of services are close. I believe that car-sharing is dependent on alternatives, not only public transport, but also the possibility to reach work, services and shopping with bicycle and by foot. However, that can equally well be obtained in a smaller or medium sized city, where everything is located centrally in town.¹¹⁰

In North America, the city and town structures look different from those in Europe. One of the reasons for the fairly low occurrence of carsharing in North America was earlier ascribed to poorly developed mass transit systems. A related factor is the spread of households to vast suburbs; suburbanization has resulted in residential areas very difficult for public transit to serve sufficiently.¹¹¹ Nevertheless, the metropolitan areas in the U.S., mainly on the East Coast, have a very large number of people who commute daily with public transport. At first sight, these areas seem to have a high carsharing potential, as a complement to the trains and buses. But when studying the demography of commuters, one finds that they are on average well off and can easily afford private automobiles in addition to their daily commuting by train and bus. This large segment of travelers does not use public transport for economic reasons, but to save time and avoid getting stuck in traffic congestion. And as Carsten Peterson at STATTAUTO says, when starting new carsharing groups it is of significance that it

¹⁰⁸ <http://www.flora.org/afo/afz/issue9-II.html>, 970911.

¹⁰⁹ From an e-mail interview (971124) with Joachim Schwarz at the ECS office, in Bremen, Germany: office@ecs.carsharing.org

¹¹⁰ From an e-mail interview (971123) with Magnus Petterson.

¹¹¹ Pucher, J. (1994, p. 11).

be expensive, or relatively so, to drive and maintain single-occupancy private cars (in addition to the existence of efficient public transit).¹¹² Correspondingly, they claim at Bilkollektivet in Norway that a criterion for a large share of potential members is to have access to efficient public transit close to home:

The average member lives close to some kind of public transit, which goes at least four times per hour.¹¹³

In later studies, it will be especially interesting to follow up the carsharing organizations in Los Angeles and San Francisco in California, and to see whether or not the motives for becoming a member there differs from motives in Europe.

4.1.2 Parking and CSO:s

We have just discussed the comprehensive features of changing travel patterns in an environmentally beneficial direction. It stands clear that facilitation from social and physical structures can be key when it comes to organizations and citizens reducing their negative environmental impact of their travels. Carsharing is seen by its proponents as a way of creating a more holistic picture of mobility and access, instead of thinking in a more traditional car monopolist way. To illuminate the presumed positive dependence of carsharing upon public transit, and potentially vice versa, is one element in a holistic picture. From this follows that the projects of carsharing organizations could be greatly facilitated by their municipalities in a number of ways. One way is to make parking easier and cheaper for cars that belong to a CSO than for privately owned ones. Since so little research has been done on carsharing, it is useful to look at research on carpooling and parking policy.

The U.S. tax policy has led to free parking at the work place for 90 percent of workers in the U.S. However, employers can still choose whether they want to use this tax deductibility or not. It has thus been possible to compare automobile occupancy between work places that provide their employees with free parking and those who do not. In one study the former type of parking policy led to an average of 1.2 persons per car, while the latter led to an average of 1.8 persons per car.¹¹⁴ In another comparative study, the share of solo driving dropped from 92% to 74% when the drivers had to start paying for their parking, which is quite a radical difference.¹¹⁵ Parking price is thus a discernible factor for car use. Applied to carsharing, Carsten Petersen at STATTAUTO claims that one critical requirement for beginning new groups be that "it must be difficult and unattractive to drive and park [privately owned] cars."¹¹⁶

Introducing cheaper parking for shared cars compared to privately owned automobiles is likely to go before a new and rather strong motive for sharing cars. The price difference could be that the CSO gets free parking for its operation. In the next step, members could get free parking when using the shared cars. From the CSO:s

¹¹² <http://www.flora.org/afo/afz/issue9-II.html>, 970911.

¹¹³ Berge, G. (1997).

¹¹⁴ Wachs, M. (1991. p. 336).

¹¹⁵ Wachs, M. & Giuliano, G. (1991, p. 14).

¹¹⁶ <http://www.flora.org/afo/afz/issue9-II.html>, 970911.

point of view, the goals of carsharing are in accordance with several of the goals of municipalities: to reduce the total number of cars, to improve the local air quality and minimize traffic congestion. This ought to make the local policy makers interested in supporting carsharing:

Currently a private organization like StattAuto is prohibited by law to use public parking spaces for its operations. The car-sharing organization argues, however, that car-sharing reduces parking space need and therefore should benefit from public support, mainly in the form of free access to public parking spaces.¹¹⁷

The unwillingness of some local decision-makers to give this advantage to CSO:s may be due to a lack of acceptance of carsharing as an extended arm of the public transport system.

... An important move therefore would be to acknowledge car sharing as carrying elements of public transport. Presently it is treated like any other private transport business meaning that it can't receive public funding. Many local carsharing groups however would already be glad if they were allocated public parking spaces at central locations and thereby would receive some indirect support. With their activities being in the public interest and probably just as valid as Park & Ride facilities at train stations or state funded night buses.¹¹⁸

It could nevertheless be that some municipalities still regard CSO:s as possible competitors to public transit systems, systems that need all the passengers they can get once the systems are operating. Later in this report, we will study the history of carsharing members and see if carsharing, as all the CSO:s claim, is only a complement and not a competitor to public transit. A distinction should be made between (a) the benevolent goal of CSO:s of being only a complement to Public transit, and (b) the ways in which people actually use their memberships. On the other hand, it can be argued that municipalities, aiming at reducing the number of cars and increasing public transit, ought to empirically test what free parking for CSO:s will do to the overall transport system and urban environment. They can for instance be done as local experiments, with an initial trial period.

The town of Sangerhausen in Germany has been a setting for such an experiment. Here, there is an agreement with the public authority regarding free parking for CSO:s. In some other places, where local authorities have not supported free parking, the German Railways (Bundesbahn) cooperates with CSO:s on this issue, helping with parking spaces close to the railway stations. Inside these stations there is usually information on the local CSO. This cooperation is an important step towards an alternative and more diversified transport system.¹¹⁹

¹¹⁷ <http://www.epe.be/epe/sourcebook/3.18.html>, from 970911

¹¹⁸ <http://www.epe.be/epe/sourcebook/3.19.html>, from 970911

¹¹⁹ <http://www.epe.be/epe/sourcebook/3.18.html>, from 970911

4.1.3 The Location of Carsharing Stations

The issue of parking raises the question of where carsharing stations should be situated in order to serve their members in an optimal way, and hence attract more former private car owners. As we have seen, to have access to centrally placed parking turns out to be critical for carsharing organizations. Still, several people who are active within carsharing organizations hold that housing areas and neighborhoods, are preferable bases for carsharing stations.

- What importance does the location of the carsharing stations have, and should it be situated downtown or close to big neighborhoods?
[R1]: - I think a carsharing station should be located at home, since people make a psychological connection between their home and their car.¹²⁰

[R2]: - A high-density neighborhood is important.¹²¹

One reason for seeing residential areas as the best location is that it gives carsharing one of the convenience features of private car ownership – attachment to homes. There is still another social factor that may be of interest: the contact *between* households and neighbors. In the section about *social hopes* this was regarded as a potentially fruitful factor for cooperation. One could ask what roles local acquaintances play when it comes to influencing each other to change travel modes. Can the theories be verified in the carsharing concerning whether local experiences are seen as especially trustworthy? This is tested by surveying how people found out about the local carsharing club, such as if they talked with neighbors who were already members. In some instances the cooperation is perhaps more “advanced,” so that neighbors together initiate carsharing clubs. But as was mentioned earlier the neighborhood-based organizations are often difficult to trace, since they tend to be economic associations that are not economically active. They are in certain cases also “hidden” within tenant owners’ associations and the like.

A further reason for placing carsharing stations close to residential areas rather than downtown is that the latter placement runs the risk of leading to competition with the public transit system. ECS is, as will be mentioned later, creating a network of CSO:s in which, for example, a member of a Swiss CSO can take the train to Berlin and use his or her membership to drive with cars owned by a CSO in Berlin.¹²² And the access to public transit, e.g. buses, is usually the best close to central railway stations. In these cases carsharing runs the risk of becoming no more of a competitor than conventional car rental firms.

4.2 Carsharing and Organization

Now we will survey the importance of organizational form and content to increases in CSO membership.

The basic questions are:

¹²⁰ From an e-mail interview (971123) with Magnus Petterson.

¹²¹ Interview 970919 with Peter Markusson, Car cooperative MAJORNA, in Gothenburg, Sweden.

¹²² <http://www.flora.org/afo/afz/issue9-II.html>, 970911.

- What economic/organizational forms of carsharing exist?
- Is there an ideal size of the organization, and an ideal growth rate?
- What are the member fees and tariffs, and what implications does the pricing have for the number of members and the travel patterns of members?
- What other organizational and practical conditions may be of interest?

4.2.1 Economic/Organizational Forms

Public, Private versus Cooperative based Carsharing

As for now, one can distinguish between three types of shared, sequential, automobile use (carpooling not included):

1) Public sector based carsharing

Public sector based carsharing is so far a marginal phenomenon, but in municipalities with a growing holistic way of thinking about Mobility and access, it is likely to become more common in the future. One example that has been found is Bellevue, Washington. There the city government has offered its city-owned passenger vehicles for carsharing, preferably carpooling, to city employee commuters. This has helped solve parking problems in the area, as a number of cars used in the area during work hours can also be used for commuting. The riders get a monthly bill for the extra driving.¹²³

It should be noted that when citizens have been interested in starting carsharing, the interest of local governments has not seldom been rather cool regarding assisting initiatives with public carsharing projects. The most well known example is the foundation of STATTAUTO by Markus and Carsten Petersen, who did not get much help from the local authorities, at least not in the beginning.¹²⁴

2) Private company based carsharing versus 3) car cooperatives

It stands clear that the ideological factors presented in the theory chapter are not sufficient here. Most members in various forms of carsharing are likely to ascribe to automobile complementarism. But within this standpoint, people's ideology when it comes to organizational form and form of ownership may reflect their likelihood of choosing one kind of carsharing before another.

As carsharing has become increasingly popular, some of the most well established car rental companies and corporations have tried to enter the carsharing business. In Switzerland, Hertz, Europcar and ADAC have been active in making available the possibility for private households to subscribe to rental cars from the companies.¹²⁵ The results have varied. In the Oslo area in Norway, the car rental company AVIS started to sell car rental subscriptions almost at the same time as the carsharing cooperative *BILKOLLEKTIVET* began to operate. After the trial period, AVIS only

¹²³ "Carpooling With City-Owned Vehicles." (1979).

¹²⁴ <http://www.flora.org/afo/afz/issue9-II.html>, 970911.

¹²⁵ Vester, F. (1995).

got 5 subscribers, while 80 people had signed up as members of BILKOLLEKTIVET. Obviously, this can not be seen as an experimental comparison. There were many other factors that differed between the two carsharing forms. BILKOLLEKTIVET could offer their members a number of carsharing stations close to big residential areas, while AVIS only had car subscriptions at one of their branches. Moreover, BILKOLLEKTIVET had more exposure in the mass media than AVIS.¹²⁶

It is tempting to tell stories of idealistic cooperatives that are more successful (in terms of size and growth) than profit-seeking corporations. But before more rigid comparisons have been made there is no legitimate basis for such a story. In a subsequent comparative study, a hypothesis might be that people looking for possibilities to share cars are especially interested in how the sharing is organized in addition to the environmental and economic aspects. Another hypothesis would be connected to the social psychological factors brought up earlier, of influence and an interest in cooperating among neighbors and other social groups. The extent to which members work actively in the cooperative, maintain the cars, etc., may be relevant to such a study.

Yet it is not obvious that car rental and car cooperatives are in a state of opposition in all cases. Car rental companies have in certain areas been treated as one part of a larger Mobility system, alongside public transport and car coops. In Lucerne, Switzerland one of the world's leading car rental companies, Hertz, works together with the Carsharing organization ATG towards a new and wider concept of Mobility. Together they are trying to create a "Mobility-package" in cooperation with public transit, e.g. the Swiss railroad (SBB).¹²⁷ It is, however, important to keep in mind that the main goal of car rental companies is profit. It will be interesting to see how the cooperation develops between organizations with such diverse goals and aims. Hertz has already developed the "Bahn & Auto" service, combining traveling by car and train at more than 700 train stations in Switzerland.¹²⁸ Another form of cooperation between car rental companies and car coops is when car rental companies act like a cushion. This means that the two organizations have a deal in which members in car coops can use cars from the rental company if all the coop cars happen to be occupied. This is rather common in smaller car cooperatives.

Independent versus Joint Car Cooperatives

All the CSO:s to which we have given special attention started as independent, locally-based car coops. Today, all of them, except BILKOLLEKTIVET in Norway, have expanded so that they in one way or the other are coordinated with other CSO:s. ATG is today part of MOBILITY, although already as a separate organization ATG had spread to several cities and villages in Switzerland. MOBILITY is today completely dominant in Switzerland. Germany is more diverse, but STATTAUTO is located in a number of German cities. So is DEELAUTO in Holland. MAJORNAS

¹²⁶ Berge, G. (1997). As many as 56% of the members of BILKOLLEKTIVET had learned about it through the press as a piece of news and not as advertisement. This was considerably higher than for AVIS.

¹²⁷ <http://members.aol.com/CarSharing/wagkat.html> HYPERLINK

• <http://members.aol.com/CarSharing/wagkat.html> (970911)

¹²⁸ <http://members.aol.com/CarSharing/wagkat.html> HYPERLINK

• <http://members.aol.com/CarSharing/wagkat.html> (970911)

BILKOOOPERATIV¹²⁹ (MAJORNA's Car coop.) in Sweden has no branches, but it is part of the European Carsharing Association (ECS).

It has been argued that independent, locally based CSO:s give their members greater freedom and flexibility regarding decision making and automobile access.¹³⁰ However, one of the very bases of ECS is the idea that members at the local level should take part in the decision-making processes. Thus, MAJORNA, for instance, is an economic association with yearly meetings where all members are invited. The association has a number of work groups and each member is part of one of the groups. One group maintains the cars, another takes care of accounting, a third group distributes information on the association, etc. This order was established before entry into ECS, and has remained the same after entry.¹³¹ Questions can be asked regarding whether there is an ideal size of car cooperatives, and an ideal growth rate. We have seen a member span of 80 in BILKOLLEKTIVET in Oslo, to more than 6000 in STATTAUTO and MOBILITY. As long as each local club is given the flexibility of forming their work after local conditions, there should not be a risk of growing too big and joining with other local clubs. Instead, people active in CSO:s have claimed that it is important not to be too small in the beginning. There must be a solid basis of members before it is safe to invest in cars.

I think you'll need at least three cars to make the organisation stable enough for a long period. The organisation can be made to fit the current size.¹³²

The growth rate has also been commented upon. Car coops in which the members are supposed to work actively need to spend time teaching each new member the routines. This is common in the Scandinavian countries. Teaching the routines would be difficult if the coop were to grow very rapidly:

- Is there an ideal size of the organization, and an ideal growth rate?
- Don't know about size. The growth rate is a problem in a non-profit member organisation. The new members must be trained in all functions. We are growing at a rate of 10% every month. That much is putting a great strain on both the organization and the people.¹³³

Finally we earlier noted that CSO:s especially south of Scandinavia regard a certain level of profit as helpful for car cooperatives, in order to expand the carsharing activity and invest in new vehicles. However, the concept of *profit* is easily interpreted as "operations with the main purpose of yielding a good surplus." But the stated aim of most car coops, at least within ECS, is somewhat missionary - to get more members and less traffic; and it has to be done by having some extra money for investing. They maintain that this should be distinguished from the economic goal of the big car rental companies and corporations:

¹²⁹ <http://silver.hgus.gu.se/stat/personal/mpet/mbk/>

¹³⁰ Berge, G. & Aall, C. (1994) Delt eie og bruk av bil. Elaborated by Vestlandsforskning, Norway.???

¹³¹ Interview 970919 with Peter Markusson, Car cooperative MAJORNA, in Gothenburg, Sweden.

¹³² From an e-mail interview (971123) with Magnus Petterson. M P is working at the Dep. of Statistics, Gothenburg University, and is very involved in carsharing in Gothenburg.

¹³³ Interview 970919 with Peter Markusson, Car cooperative MAJORNA, in Gothenburg, Sweden.

- Is the organizational form significant for success - profit/non-profit organization; member-owned organization, or organization owned by a company?

- I think it is relevant. I think the cooperative system of member ownership plus nonprofit is the best when it is combined with an effective and rational organisation. Otherwise car rental would be an alternative to private ownership, but it isn't. People think it is too expensive and complicated to rent a car. Meanwhile, since most people make a connection between home and car, they want to be able to take part in the decision-making in similar ways that private car owners do.¹³⁴

4.2.2 Membership Expenses

It is beyond the scope of this study to make exact comparisons between a number of CSOs. Instead, we want to illustrate the general features of the pricing system for carsharing, and relate it to private car ownership.¹³⁵

The pricing system itself for carsharing organizations stimulates the member/driver's reflexivity about his or her travel costs in a way that private car ownership has been criticized for not doing. In line with the discussion in chapter Three on hidden automobile costs, there has been research done on drivers' own estimations of how much it costs to own and use an automobile. There is empirical evidence that automobile drivers in general largely underestimate their total expenses. When a person calculates travel costs, he or she rarely includes all expenses: gas, oil, maintenance, tires, license, registration, insurance, depreciation, financing, parking fees and tolls, etc. In a discernible proportion of cases, the private calculations are as much as two to three times lower than the real total costs.¹³⁶ That means that many private car owners and users actually think that their travel mode is considerably less expensive than for example transit use, when the real proportion is reversed. It also means that many private car owners have the wrong picture of how much money they would save by joining a CSO. Presumably, better information about real automobile costs would make more people interested in alternatives to private car ownership. Members within the CSO MOBILITY, Switzerland pay (approximately):¹³⁷

a membership fee of 1000 Swiss francs (\$ 450 per year),
a kilometer fee of 50 centimes (40 cents) including gasoline,
an hourly fee of 40 centimes (35 cents),
2.35 francs (\$2) per hour for driving 100 kilometers or more.¹³⁸

¹³⁴ From an e-mail interview (971123) with Magnus Petterson.

¹³⁵ For more detailed comparisons, see the references of this section.

¹³⁶ Freund, P. and Martin, G. (1993, pp. 130-131).

¹³⁷ We stress that these figures are presented to give a rough idea of the pricing systems. The figures are approximate and very difficult to compare, not least since the currencies have changed between the two estimations. The dollar was stronger when MAJORNA's fees were converted from Swedish crowns.

¹³⁸

HYPERLINK

<http://members.aol.com/CarSharing/wagkat.html>

• <http://members.aol.com/CarSharing/wagkat.html> (970911)

As a comparison, MAJORNAS BILKOOPERATIV in Sweden charges for a Toyota Corolla:

A yearly fee of 200 Swedish crowns (\$26)

A booking fee of 15kr (\$2) each time

A kilometer fee of 1.20kr (16 cents) including gasoline

An hourly fee of 100 Kr (\$12, 82).

These (after conversions into US \$ very rough) figures can be compared in several ways. The bottom line in our study is, however, the following: Carsharing can be said to be economically profitable in general for members who drive less than the span of 12,000 km.¹³⁹ and 15,000 km per year.¹⁴⁰ And at least when it comes to privately owned automobiles, a rather large category is driven less than that. In Holland, for instance, one fourth of the cars are driven less than 10,000 kilometers a year.¹⁴¹ When CSO:s inform about carsharing they present research on how much money CSO members save compared to private car owners. Hille (1993) in Norway has estimated that each household in average can save 12 000 – 15 000 Norwegian crowns.(US\$ 1700 – 2300) each year. This estimation is based on the total average costs for an owned automobile: 30 000 - 34 000kr (\$ 4300 – 4900).¹⁴² A study in Berlin comes up with the same result, finding that carsharers save “more than 2,000 US dollars per year.”¹⁴³ Although carsharing is, according to these figures, less expensive than private car ownership, we should keep in mind the ECS principle that the use of carsharing cars must not be cheaper than similar trips with mass transit. In compliance with this principle, Peterson (1993/1995) has found evidence that similar trips, where public transit is available, are often four times more expensive with carsharing (solo drive) than with public transit. This ought to be a strong reason behind the fact that carsharers in Switzerland use public transportation for three fourths of their trips (see the part *Travel Modes Today*).

The usefulness of the figures of savings for carsharers depends on the distribution of yearly costs for car ownership and use among the population. If a large share of the car owning population pays \$ 4300 – 4900 each year, the estimation of the average amount of money saved is very useful. However, if there is a large proportion of drivers who pay less, for example by driving old cars, the figures lose some of their importance. One may assume that people who drive old cars belong to one of the largest target groups for CSO:s. Thus, their comparative expensive would be useful to pay extra attention to in an in-depth study.

4.2.3 Practicalities for Users

Regarding the pure practicalities of carsharing memberships, some routines seem to be roughly the same, or moving in the same direction between CSO:s. In

¹³⁹ <http://members.aol.com/CarSharing/wagkat.html> (970911)

¹⁴⁰ Interview 970919 with Peter Markusson, Car cooperative MAJORNA, in Gothenburg, Sweden.

¹⁴¹ <http://www.epe.be/epe/sourcebook/3.18.html>, from 970911

¹⁴² Hille, J, (1993). This estimation is based on the total average costs for an owned automobile: 30 000-34 000kr (\$ 4300 – 4900)

¹⁴³ <http://www.econet.apc.org/climate/10.c1.cars.html>, 970911

STATTAUTO, MOBILITY, MAJORNA and BILKOLLEKTIVET, the participants book a car by phone or sign up on a list.¹⁴⁴ This is commonly done by calling a 24-hour hotline. At STATTAUTO and MOBILITY the user goes to the carsharing station, and uses a personal magnetic card to open safe-deposit boxes, which contains the car keys.¹⁴⁵

At MAJORNA, each member has his or her own key to the cars.¹⁴⁶ STATTAUTO is, in cooperation with Mercedes Benz, trying to develop a touch key, which will give members direct access to the shared cars. There is among the CSO:s a great fascination with computerizing several practical steps. Here is an example of the technological vision of members in Zürich, concerning their car access on a trip to Berlin:

The keys to the safety boxes are being standardised for ECS-members. So if you [a member of a CSO in Zürich] are lucky your key already works in Berlin and you don't even have to go somewhere to collect the car key. You simply take the car key from the outdoor safety box and drive off. When coming back you would park the car again at the station and leave the keys in the safety box. The kilometers driven in other cities are accounted among the car sharing organisations. The amount is simply added to your monthly bill.¹⁴⁷

Today CSO:s use logbooks in which users manually fill out the distance and duration of the trip,¹⁴⁸ a step that will probably be computerized in the near future. The participants get their bills the following month. The size of the staff varies across different CSO:s and stations. STATTAUTO has today at least nine people working full-time and 32 working part time. Smaller CSO:s, such as MAJORNA, concentrate more on the cooperation among the car users themselves. This is also dependent upon economic strategies and profit aims that vary across car coops.

All CSO:s try to keep the chance of getting the car one wants to 90%. In CSO:s with more than one station, members are welcome to use other stations if all the cars in the closest station are occupied.¹⁴⁹ STATTAUTO, for instance, has 14 car sharing lots in Berlin. A survey done with car sharers in Switzerland showed that 46% of them "never," 12% "sometimes," and 3% "often" had wanted to book just any car without any luck.¹⁵⁰

We earlier discussed the importance of the location of the carsharing stations. In looking at how far from the stations that members live, it is obvious that the location plays a key role in motivating membership. In STATTAUTO, it turned out that as many as 56% of carsharers had the nearest station 10 minutes or less away from their home. 83% had the nearest station less than 20 minutes away. Among the ShareCom members (now part of MOBILITY in Switzerland) 69% lived 10 minutes or less away. It seems as if convenience is a central key to membership success:

¹⁴⁴ See e.g. Berge, G. & Aall, C. (1994).

¹⁴⁵ <http://www.flora.org/afo/afz/issue9-II.html>, 970911, <http://members.aol.com/CarSharing/wagkat.html> (970911)

¹⁴⁶ Interview 970919 with Peter Markusson, Car cooperative MAJORNA, in Gothenburg, Sweden.

¹⁴⁷ <http://www.epe.be/epe/sourcebook/3.19.html>, from 970911.

¹⁴⁸ <http://members.aol.com/CarSharing/wagkat.html> (970911)

¹⁴⁹ <http://members.aol.com/CarSharing/wagkat.html> (970911)

¹⁵⁰ Muheim, P. (1995/1).

- What other organizational and practical conditions may be of interest?
- The chance of getting a car is very relevant, as well as the booking system. It must be simple to be a car-sharer, almost as simple as with one's own car.¹⁵¹

Another important point of being a member in a CSO is the availability of different kinds of automobiles. Both STATTAUTO and MOBILITY have for example nine different kinds of automobiles, from very small, to electro vehicles and larger transport vehicles.¹⁵² STATTAUTO, MOBILITY and MAJORNA have all introduced electric and alternative fuel cars, all in line with their environmental ambition and image. The choice of different kinds of cars raises environmental question marks. The environmental idea of this choice is obviously that carsharers not use larger or more environmentally burdensome vehicles than needed, and that they choose according to unique purpose of each trip.¹⁵³ This is especially relevant in countries where gasoline and car prices are comparatively low. In the U.S., for instance, many households own big station wagons and vans, which they use for most trips, including solo driving. This uniform car use could be changed in an environmentally beneficial way by letting drivers choose car size for each trip. What car types are most car sharers then looking for? A member survey done by ATG, now part of MOBILITY, in Switzerland, showed that station wagons are the most popular. 47,8% of members wanted to use station wagons "often" or "very often," while 24,7% wanted to use a compact car often or very often.¹⁵⁴ However, the relative environmental impact can not be assessed merely by looking at these proportions. First, an in-depth study has to been done where the travel patterns of carsharing members are mapped out. Perhaps most of the people asking for station wagons are families with four or five members, with the use of two compact cars as the only alternative.

4.3 Users: Individual and Household Aspects

From discussing how carsharing is organized we have finally come to the car sharers themselves. One type of question relates to *demography*: Who are the carsharers, and what socioeconomic categories do they belong to? Why does the carsharing demography look the way it does? Is the demography likely to change as carsharing spreads? Another battery of questions deals with *the relative environmental impact* of car sharers: What is the most common "travel mode history" of the members? Are they former automobile totalists, or former public travelers? Can we say anything about their probable choices of travel modes in the future?

4.3.1 Who are the Carsharers? - Demography

When inquiring about carsharer demography, the answers given by people responsible for CSO:s in Germany, Norway, Switzerland and Sweden are rather consistent. Most carsharers are middle-aged and have a higher than average formal educational

¹⁵¹ From an e-mail interview (971123) with Magnus Petterson.

¹⁵² <http://www.epe.be/epe/sourcebook/3.18.html>, from 970911

¹⁵³ Doherty, F. T. et al. (1987).

¹⁵⁴ Muheim, 1995/1. "Often" and "Very often" should be interpreted as often or very often among the cases when the members use the shared cars. "Very often" could thus be once a month for some carsharers.

background in these countries. The term for this social segment is often "the new middle class." The average STATTAUTO member is described as follows, and can roughly represent carsharing organizations in all these countries:

Today's member is 35, [...] has a university degree, votes Green, is a teacher, architect or other professional, is idealistic but not avant-garde.¹⁵⁵

Age

In Oslo, most carsharers are said to be men between 30 and 44 years of age.¹⁵⁶ A comparison can be made with a survey carried out in 1995 of all CSO members in Austria. Among them, as big of a share as 85% was between 25 and 43 years of age, with the median age being 32. A clear age pattern is that very few members were more than 44 years old. A deviation of carsharers compared with the Austrian average is the number of children aged 18 or below in carsharers' households, which is 1.1 compared to 0.6 among the whole Austrian population.¹⁵⁷ This variable is not proven statistically discernible, however, since the number-of-children variable has not been separated from the age variable of carsharers in a multiple regression analysis; it is quite natural that most parents to non-adult children are between 25 and 43 years old. The CSO:s themselves, in the other countries, stress that their members are parts of households with and without children in a fairly even proportion.¹⁵⁸

Formal Education

At MAJORNA, in Sweden, participants are said to be "generally employed by society (medicare, teachers etc.), 'academic' jobs or 'cultural' ones." Correspondingly, as many as 76% of the members in Oslo has a college or university degree.¹⁵⁹ To go back to the Austrian carsharers, they, like members in the other countries, had much higher formal education than their compatriots in average: 82% of the Austrian carsharers held either a university degree, had reached the university entry level or had professional secondary education. This can be compared to only 27.5% of the whole Austrian population.

Income

We get less clear results when studying income among CSO members. A person responsible for MAJORNA in Sweden states that "Income varies from poor to wealthy."¹⁶⁰ In Norway mid- or high income earners are claimed to be overrepresented among participants.¹⁶¹ StattAuto's carsharers earn between \$2,000 to \$3,000 per

¹⁵⁵ <http://www.flora.org/afo/afz/issue9-II.html>, 970911

¹⁵⁶ Berge, G. (1997).

¹⁵⁷ Steininger, K. et al. (1996).

¹⁵⁸ See e.g. Berge, G. (1997).

¹⁵⁹ Berge, G. (1997).

¹⁶⁰ Interview 970919 with Peter Markusson, Car cooperative MAJORNA, in Gothenburg, Sweden.

¹⁶¹ Berge, G. (1997).

month, which is a bit above average.¹⁶² The Austrian study reveals that carsharers in Austria earn a bit more (28 531 ATS), but not a lot more than the average (26 550 ATS):

The income benefits of higher education are outweighed by the unfavorable age structure. CSO members are mostly at the beginning of their professional career.¹⁶³

Gender

Since carsharing is a practice of households, it is somewhat difficult to draw fruitful conclusions about whether men or women are the most active carsharers. Perhaps this is why so little research has been done on the topic. In a survey of BILKOLLEKTIVET, the researchers had expected that most members would be women, but the opposite was true: 61% were men and 39% women.¹⁶⁴ The male majority has been confirmed also in the studies of other CSO:s that we have found.¹⁶⁵ In a STATTAUTO survey in Munich, men constituted 63% and women 37% of the members.¹⁶⁶ Why do the gender proportions of carsharing look like this, countering the intuition of many of us? It may have to do with traditional gender roles, which are still a part of modern society; automobiles have by tradition been closer to the everyday life of men than of women. In Sweden, 69% of all privately owned cars are owned by men. Also, men use cars more than women. 70% of men in Sweden drive an automobile to and from work, compared to 50% of women.¹⁶⁷ However, one can assume that membership in a CSO is used to get access to a second car in some households with two adults; and since men tend to claim the right to use the households' cars the most, one could assume that women would be inclined to become CSO members instead. From a purely environmental perspective the male dominance of CSO members may be a positive sign that many carsharing households do not own any "first car." This will be empirically verified later on.

Further Interpretations of the Demography of Carsharing

How can the figures of age, formal education and income be understood in a broader societal context? Since this is an exploratory study, we will here indulge ourselves in some rather free associations.

Before interpreting these variables directly, one ought to keep in mind a potentially discernible background variable: the *locations* of car sharing clubs and stations. It was made clear earlier that carsharers very rarely live more than 20 minutes away from stations.

Most live just outside downtown, in the suburbs, close to car-sharing stations.¹⁶⁸

¹⁶² <http://www.flora.org/afo/afz/issue9-II.html>, 970911

¹⁶³ Steininger, K. et al. (1996).

¹⁶⁴ Berge, G. (1997).

¹⁶⁵ Muheim, P. & Partner for ECS (1996); In the Netherland the gender ratio is 59% men and 41% women (Evaluatieprogramma de Deelauto in Nederland (1997).

¹⁶⁶ *Pressemitteilung von STATTAUTO München*, May 6, 1996. Münchner Verkehrs- und Tarifverbund GmbH.

¹⁶⁷ Lindén, A-L. (1996).

¹⁶⁸ From an e-mail interview (971123) with Magnus Petterson.

Accordingly, a Swiss survey shows that 71.2% of private car owners mentioned neighborhood location as a key precondition for sharing cars (Baum & Pesch, 1994). We also found out that potential carsharers tend to require well functioning public transit close to their homes. That is still another “selection process”, in line with the idea of supportive social and physical structures. The bottom line is the question: Could it be that carsharing organizations tend to be located in areas where the most common kind of initiators – young university graduates – live themselves; and is it not likely that these residential areas are overrepresented by young people with a university degree? This would make these areas biased when trying to isolate the variables of age and formal education. The choices of locations for carsharing need to be tested in another study.

The role of educational level for environmental concern has been studied in relation to a number of everyday activities. In several large studies researchers have found that formal education is the independent variable that correlates most strongly with environmental concern.¹⁶⁹ Why this is so has been debated considerably. *One* reason could be that new information about environmental impact and action change tends to have scientific features which are more attractive for highly educated people to learn about. A *second* interpretation is that people with higher education also tend to be more politically active, and that they are more used to being able to have influence on society. According to this idea such societal influence has spread to the “environmental sphere.”¹⁷⁰ *Thirdly*, the concept of conspicuous consumption raises the issue of the meaning of car ownership for people with different social positions. Could it be that in our time, when automobiles have become real “Volkswagens,” membership in a CSO is becoming a marker of distance for the new middle class from the car owning majority of households?¹⁷¹ A *fourth* factor especially relevant for carsharing is the phenomenon of “innovations.” There has been conducted quite fascinating research on innovations, such as how they are initiated, and how and by whom they are adopted and spread. While environmental adaptation often has been interpreted by the research community as adaptation to technical innovations, CSO:s are better described as *organizational* innovations. In a classic study adopters of innovations were categorized as a) innovators, b) early adopters, c) early majority, d) late (skeptical) majority, and e) laggards (traditional). As carsharing has not yet spread to anything close to the majority of citizens, carsharers today fall within the category of *early adopters*. It turns out that “*early adopters have more years of formal education than later adopters.*”¹⁷² In congruence, early adopters also have higher social status, including occupational prestige and income, than later adopters.

A few clarifications need to be made, however. Regarding studies about the correlation between socioeconomic status and environmentally beneficial action, there has frequently been a bias towards conscious and “fancy” environmental action. An

¹⁶⁹Howell. & Laska Ibid

¹⁷⁰Mohai (1985).

¹⁷¹ In 1990, Germany, the most car dense country in Europe, had 481 cars per 1,000 inhabitants. In the U.S., the proportion is 648 automobiles per 1,000 population, the highest in the world. The total number of cars are continuously increasing: 17% in the U.S. between 1980 and 1990, while the population grew by less than 10% during this period. The total increase of cars in Europe varied from 12% (in Switzerland) to 51% (in Portugal), depending on previous levels of automobiles. One should note, however, that the rate of growth in vehicles in the U.S. diminished slightly during the late 80s (Pisarski, A.E. (prep. 1996).

¹⁷² Rogers, E. M. (1962/1995, 4th ed, pp. 261-272).

example is how well-oriented people are with the jungle of labels representing environmentally friendly/politically correct/healthy household products. Here it is the well-educated who are the most active.¹⁷³ One reason for this research bias may be that the researchers belong to the new middle class themselves, and choose their variables based on their own experiences. Another factor is that environmental innovations other than carsharing have in some areas been much more dependent upon supportive physical and social structures than upon the level of formal education. Levels of “environmental success” have been studied in municipalities where local authorities have had rather comprehensive goals of source reduction and composting, and where both technical and organizational innovations have been introduced. Success has often been much more dependent upon: the social climate, the general level of cooperation in the neighborhoods, and the physically and politically supportive structures directed towards neighborhoods than upon the level of formal education among the households.¹⁷⁴

This example suggests that the innovation or carsharing has at least good theoretical chances of spreading to the broader public, given that political, physical and social structures support and facilitate the process.

4.3.2 Travel Mode Choices of CSO Members: Yesterday, Today, and Tomorrow

Travel Modes Yesterday

At BILKOLLEKTIVET in Oslo, 68% of the participants do not own a car, although they used to before they became members.¹⁷⁵ However, it is not clear whether they gave up their automobile up in connection with their entry into BILKOLLEKTIVET, or if they had a period when they used alternatives to the car before they entered the CSO. Another 15% have never owned a car. At STATTAUTO, there has been a rather strict rule: Carsharers should not be car owners. That has led to that as many as half of StattAuto’s participants giving up their private automobiles before they joined.¹⁷⁶

This is a charming story about environmental adaptation. Yet it is too bold to draw the conclusion that none of these people would have gotten rid of their cars even without the possibility of becoming a carsharer. It is very probable, however, that STATTAUTO was the trigger for a large share. Three further studies have been done of carsharers in Switzerland and Germany. One of the foci here was travel mode history. The proportion of all members who claimed that they had given up their private car *due to carsharing* ranged from 23.0% (ATG, 1990) to 26.2% (Baum &

¹⁷³ Often forgotten are less conspicuous environmental actions, such as reusing plastic bags, using small amounts of hot water, using vinegar instead of artificial products for cleaning, as well as washing one’s clothes less frequently than is usual in the industrial world. These actions are much more often found within the oldest generation, and are habits learned during times with greater material scarcity. See Lindén (1994, p. 63).

¹⁷⁴ Klintman, M. (1996).

¹⁷⁵ Berge, G. (1997).

¹⁷⁶ <http://www.flora.org/afo/afz/issue9-II.html>, 970911.

Pesch, 1994). Members who had given up their car *independently of car sharing* ranged from 29.7% (Baum & Pesch, 1994) to 31.1% (ATG, 1990).¹⁷⁷ The rest of the members had either never owned a car, or had eliminated it long before the CSO entry.¹⁷⁸ At MAJORNA in Sweden, only 30% owned a car before they entered.¹⁷⁹ This creates environmental question marks. Are the rest, 70% of the members, moving in a more or less positive environmental direction? This can not be answered using our limited data. It could also be that all those 70% were choosing between becoming a CSO member or buying a car. Again, a more in-depth study is needed.

Travel Modes Today

Regardless of how the carsharers travelled before membership, they now clearly travel in ways considered environmentally sounder than the whole population on average. At BILKOLLEKTIVET, there is no rule that carsharers can not be car owners. But the proportion of car owners is low there – only 15%. In three other studies of carsharers in Switzerland and Germany, the share of car owners is even lower: 3.0% (Baum & Pesch, 1994), 6.3% (Hauke, 1993), and 5.5% (ATG-Survey, 1990).

Of the carsharers in Oslo, 59% ride their bikes 5-7 times per week, compared to 17% among the average population in Oslo.¹⁸⁰ At STATTAUTO, a monthly pass for public transport is attached to the magnetic member card, which is one reason for the high mass transit use of the participants. In Berlin, the organizers proudly state that the members' commuting by car to work has been reduced to 1/10 of the commuting before membership. The users also drive less than half as much as before.¹⁸¹ As was mentioned in the introduction, carsharers in Germany have diminished their car use by 42.1%, from 7.000 km/year to 4.050 km/year.¹⁸² In an Austrian investigation, carsharers, who previously did *not* own a car increased their car mileage from 25.7 + 30.3 km/week (+117.9%). Carsharers who used to own a car reduced their car mileage from 312.2 to 192.9 km/week (- 61.7%). The total environmental gain or loss from these CSO:s cannot be assessed by looking at these data alone. We need to know the relative proportion of these two user categories. Of the members studied, 47.5% owned a car before membership. This leads to a total reduction in car mileage of at least 46.8% the car sharing of the two groups.¹⁸³ The net effect should be possible to calculate in all CSO:s, and that information may give public authorities a clearer picture of the environmental benefit of carsharing.

Furthermore, members of ATG (today part of MOBILITY) in Switzerland use public transportation for 75.8% of their mileage, the rest complemented by CSO cars (14.9%) and other cars (9.3%). The case is the other way around for the average middle car owner in Switzerland, as was mentioned in the introduction. He or she

¹⁷⁷ From Muheim & Partner for ECS (1996).

¹⁷⁸ <http://www.flora.org/afo/afz/issue9-II.html>, 970911.

¹⁷⁹ Interview 970919 with Peter Markusson, Car cooperative MAJORNA, in Gothenburg, Sweden.

¹⁸⁰ Berge, G. & Aall, C. (1994).

¹⁸¹ <http://www.epe.be/epe/sourcebook/3.18.html>, from 970911.

¹⁸² Baum, H. & Pesch, S. (1994). See also Muheim & Partner for ECS (1996).

¹⁸³ Steininger, K. et al. (1996).

travels 80% of total mileage with their own car and 20% with public transportation.¹⁸⁴ In the theory chapter we mentioned “balancers” as the very large ideological category aiming at “balance” between the different travel modes. That term is obviously very flexible – in the eye of the beholder (Taebel et al. 1975/1986). It has been shown that many people calling themselves balancers approve of the 80-20 ratio, an immense favoring of car use.

Finally, CSO members do not use the cars equally often for all trip distances. In Austria, for instance, former car owners reduced their 20-50 km long trips from 88% to 50%. That trip distance was the most popular for using carsharing cars as opposed to public transit. The propensity for using carsharing cars is drastically reduced as the distances increase. Trips longer than 100 km were reduced from 63% by car when the members owned a car, to 0% after entrance into a CSO. Public transit becomes increasingly more cost efficient for longer trips, while the opposite is true for carsharing cars.¹⁸⁵

Travel Modes Tomorrow

Since carsharing is such a new phenomenon, there is not much that can be said with certainty about how today’s carsharers will travel tomorrow. The closest we get is to see how members *say* that they will travel in the future. Unfortunately, this has not yet been studied systematically. In ATG (now part of MOBILITY), 37.2% of the users in 1990 were people who claimed that they had not used cars before membership, *and that they would never buy a car.*¹⁸⁶ What this tells us about the actual travel mode future of these users is, as was made clear in the theory chapter, uncertain.

From a purely practical point of view, adults with young children ought to be a life cycle category with a comparatively strong need for Mobility and access. Once this period in life is over, they should not suddenly get a stronger need for car use, one could argue. But there is in fact a stage in the life cycle when access and Mobility may be even more important – households with teen age children; and since carsharers in average are around 35 years old, their children are often younger than that. Another related factor is that young, highly educated adults who are carsharers today will raise their salaries considerably by the time their children are teenagers. Several studies show, not surprisingly, that car ownership is positively correlated with income level.¹⁸⁷ We can also see that car owners age 45-64 use their cars for both longer periods per day and for longer distances than people 25-44 years old.¹⁸⁸

If we hope that the carsharers will stay carsharers and not use CSO membership as a springboard towards ownership, there are two main factors to rely on:

A) Environmental concern

CSO:s all have a strong environmental profile, and so do many of their members today. In an Austrian survey on carsharers motives for joining the CSO, these were a few of the results:

¹⁸⁴ Muheim, P. & Inderbitzin, J. (1992).

¹⁸⁵ Steininger, K. et al. (1996).

¹⁸⁶ Wagner, C. (1990).

¹⁸⁷ Pisarski, A.E. (prep. 1996).

¹⁸⁸ Vilhelmsson, B. (1990); Lindén, A.-L. (1996).

“To use the car less due to cost transparency (environmental conservation)”: Average score 4.18 out of 5.

“Own contribution to traffic mitigation”: 4.25 out of 5, which can be compared with:

“To have a car available at good value for money”: 3.73 out of 5., and

“The effort to care and maintain the car being omitted: 3.21 out of 5.¹⁸⁹

A number of other questionnaires among CSO members show that they most frequently claim concern for environmental and traffic problems as their strongest motive for joining a CSO.¹⁹⁰ Also in the psychological field a Swiss study has shown that CSO members deviate significantly from the average population regarding “sensitivity to environmental problems.”¹⁹¹ Nevertheless, we should remember the difficulties of assessing the relation between attitudes and action, especially concerning environmental issues. It is easy for anyone who already shares cars to say that his or her concern for pollution reduction or energy saving is an important reason for choosing this mode of travel. Again, the answer does not have to be a dishonest one; it can also be explained by the theory of cognitive dissonance mentioned earlier.¹⁹² People’s concern for the environment over time and in the future are for obvious reasons difficult to predict. In cognitively-oriented studies on the environmental motive it has been found that too many material and temporary incentives, e.g. money given to people who save electricity during a limited period of time, run the risk of having people discontinue before their environmentally adapted practices have become internalized as a part of their values.¹⁹³ This is fortunately not how carsharing works. Membership in CSO:s is usually initiated by the households themselves. Transport mode choices also tend to be more comprehensive in their implications than savings of electricity. Further, they are generally preceded by thorough planning, with environmental concern appearing as an internalized factor from the very beginning for many users. This is promising for a continuity of CSO memberships, as opposed to a change (sometimes back) to private car ownership.

Another important factor for long term environmental adaptation is that the media continuously brings up environmental issues and the connection between everyday practices and environmental impact. An opposite scenario that many environmental researchers have feared is that environmental issues are treated by the media in too much of an event-centered way, as a series of temporary and isolated catastrophes. A good media must instead continuously help public understandings of the larger contexts of environmental decay and improvements, as well display the connections between daily practices and environmental consequences.¹⁹⁴

¹⁸⁹ Steininger, K. et al. (1996).

¹⁹⁰ See e.g. Petersen, M. (1993/1995); Hauke, U. (1993).

¹⁹¹ Haltinger, R. & Lezzi, S. (1993).

¹⁹² Klintman, m. (1997a).

¹⁹³ Kanzev, R. D. & Johnson, T.R. (1983).

¹⁹⁴ Hannigan, J. A. (1995).

B) Supportive structures for a more diverse Mobility systems:

The second factor that automobile complementarists need to rely on is continuously improved physical, political and social structures, making carsharing more convenient and uncomplicated to initiate for various local groups. Here it is critical that local governments are open to empirically test whether or not increased carsharing may help reduce the negative impact of traffic. Our report has shown very positive signs in this respect. Once local governments have become open to this, there are a number of concrete measures to take in order to test carsharing on a larger scale. To keep improving public transit is most important. Once more people have access to mass transit close to their home, transit that runs frequently, society will have helped create a larger number of people motivated to either stick to their carsharing or to abandon their private car ownership. To start giving carsharers parking advantages is a second important policy change. According to the surveys analyzed, this has the potential of making the carsharing movement both larger and more solid. A third measure, overlapping the two others, is that governments test the automobile complementarist idea of focusing on mobility and access as a whole, rather than on limited travel modes. In practice, this involves public authorities' facilitating cooperation between public transit, CSO:s and taxi supporting mobility centers with travel information for travelers, improving the traffic safety for bicyclists, etc., and then investigate what happens.

5. Summary and Discussion

5.1 General Carsharing Tendencies

In this report we have defined formal carsharing as:

The practice where a number of people share the ownership of one or more automobiles, and/or people sequentially sharing the usage of one or more automobiles owned by a profit or non-profit carsharing organization.

The ideology of formal carsharing can be called *automobile complementarism*. Its principle is that shared cars can be a powerful complement to public transport, bicycling and walking, and that a combination of these travel modes leads to efficient Mobility and access for the users. In contrast to *travel mode balancers*, automobile complementarists consider a low use of shared cars both ideal and realizable, in that carsharers should be able to have at least the same level of access as private car owners:

An organizational bylaw reads 'as much with trains and buses, bicycles and feet as possible, and only as much with autos as necessary.'¹⁹⁵

The carsharing movement is, roughly speaking, less than two decades old. It is based on an acknowledgement of steadily growing problems of traffic, urban environment and global climate. Congestion, parking problems, noise, pollution and the lack of aesthetic living environments are problems stressed both by people sharing car ownership and people sharing rides. In addition, carsharing organizations (CSO:s) emphasize the environmentally negative effects of the *production* and *disposal* of automobiles. CSO:s thus take part in the broader awareness of environmental impact during the whole lifecycle of products, in contrast to proponents of merely "less driving." In addition to the environmental motives, automobile complementarism, as represented by CSO:s, addresses the issue of democratization of mobility. However, it repudiates the "democratic" goal of one-automobile-per-adult. Instead, it holds that combinations of travel modes can lead to a more environmentally defensible mobility for everyone. CSO:s can be said to be part of the struggle for democratization of mobility also through their signing up of members who have not been car owners before. The democratic and the environmental goals are in a sense in conflict here.

When assessing the relative environmental impact of carsharing, the average or sum of car use is key. We could see examples from Germany, where carsharers in average diminish their car mileage by 42.1%.¹⁹⁶ In Austria, the reduction has been measured to 46.8%.¹⁹⁷ A reason for these dramatic reductions is that former car owners lower their

¹⁹⁵ <http://www.flora.org/afo/afz/issue9-II.html>, 970911.

¹⁹⁶ Baum & Pesch, 1994

¹⁹⁷ Steininger, 1996, a study of all Austrian carsharers in 1994.

absolute mileage more (from 312.2 to 119.3 km/week in Austria) than former non-car owners increase their absolute mileage (from 25.7 to 56 km/week).¹⁹⁸ In this case, carsharing is an environmentally beneficial action (relatively, in terms of mileage reduction) as long as the proportion of former non-car owners does not exceed 84%. The total proportion of former non-car owners is less than 60%, if we take the average from CSO:s in Germany, Austria, Norway, and Sweden.

The total number of carsharers in the 34 CSO:s in the European Carsharing Association (ECS) is approximately 36,000.¹⁹⁹ In addition there are smaller CSO:s, which are not yet part of ECS. Some carsharing is organized through tenant owners' associations, and is thus more difficult to trace.

Germany, Switzerland and Austria are carsharing centers today, but the Netherlands, the Scandinavian countries and North America are becoming increasingly active. Within the now somewhat limited social segment (chiefly young urban or suburban people of the new middle class) using carsharing, the market segment potential has been calculated to the interval 8.8 - 17.7% in an "average" urban residential area in Austria (Steininger, 1994). In Switzerland, the estimation is 12.4% of the whole population (Murheim & Inderbitzin, 1992). German studies have been more modest, and hold a 3% potential being realistic, due to a less developed mass transit system in sparsely populated areas than for instance Switzerland. Yet the German 3% potential would, if realized, lead to 2.45 million carsharers in Europe's most automobile dense country, resulting in reductions of CO2 emissions by 12 million tons over ten years.²⁰⁰

The market segment potential of carsharing is likely to increase once different preconditions facilitate more people from other social segments to join the carsharing movement.

5.2 Organizing Carsharing

Organized carsharing can be divided into a) public sector-based, b) private company based, or c) cooperative-based carsharing. Only a few examples of public sector-based carsharing can be found. It is more common that car rental companies, such as AVIS and Hertz, try to attract potential automobile subscribers. Norway and Switzerland are two of the countries where this kind of carsharing is taking place. The relation between car rental companies and c) car cooperatives has in some instances been competitive, but collaboration is more common. One type of cooperation is when car coops, car rental companies, and public transit managers try to create a "Mobility package," in which travelers are allowed to combine the different modes of travel.²⁰¹ It is not clear, however, whether the negotiations between these actors are usually made on equal terms, or if car coops have to adapt to the goals of the other, more powerful agents. Another type of cooperation is when a car coop has an agreement with a car rental company, so that the car coop can rent car rental cars cheaper than normally when all of the car coop cars happen to be occupied.

¹⁹⁸ Our calculations based on Steininger, 1996

¹⁹⁹ From an interview (971124) with Joachim Schwarz at ECS, in Bremen, Germany.

²⁰⁰ <http://www.econet.apc.org/climate/10.c1.cars.html>, 970911

²⁰¹ See e.g. <http://members.aol.com/CarSharing/wagkat.html> (970911).

Success of CSO:s can be defined as: a) *environmental* success, where the practice of the CSO and its members is less harmful for the environment than it would have been without the CSO; b) *Organizational* success, referring to a well functioning organization, where the practices of members are made convenient and reliable, at a fair cost; and c) continuous *growth* of a CSO. This is generally the main goal of commercial enterprises, e.g. car rental companies. Several of the people working in car cooperatives claim that growth and a certain profit is very important, both for making the CSO more efficient and to spread the “tidings” of carsharing. Yet they hold that carsharing should not be made attractive to the extent where a vast majority of former public transport users find the use of carsharing cars more convenient than public transport for all trips. Hence, CSO:s within ECS are required to charge more for the same trip distance than it would cost for two adults to travel by mass transit. Consequently, the use of carsharing cars is often four times more expensive than public transport for the same distances (Petersen 1993/1995), although still cheaper than the total cost for using a privately owned car. This policy may also lead to profit gains, something that may be especially interesting for CSO:s eager to expand their operation.

5.3 Carsharing and Everyday Life

Changes in travel modes are comprehensive practices in that they are closely tied to other parts of everyday life, are dependent upon the support of social and physical structures, and have different consequences for people in different stages of the life cycle (e.g. parents to young children versus single students). A critical part of the physical structure supporting carsharing is *an efficient public transit system*. We have shown that distance to bus or train stations where the buses or trains run often is highly correlated with carsharing propensity. This is true when looking at both how far from public stations carsharers live, and what they *say* is the most important precondition for their CSO membership. Moreover, when private car owners (non-CSO members) in Germany were asked about their key precondition for starting to share cars, 71.2% of them answered *neighborhood location*.²⁰² As public transit in general is the best in dense urban areas, carsharing is frequently described as a typically urban phenomenon. But data from Switzerland indicate that CSO:s can also operate in less densely populated areas (with populations of 500 or more), given that the public transit system is efficient.²⁰³

A further significant part of the physical structure is the *parking situation*. Research in the U.S. has revealed how the motivation for carpooling (sharing rides by car) covaries with the parking benefits that the car-poolers are given (see “Parking and CSO:s”). CSO managers claim that if parking were less expensive and less difficult for CSO:s and carsharers, the motivation for joining a CSO would increase immensely. Yet, if we go back to the metropolitan areas of the U.S., it turns out that difficult and expensive parking is a main reason, together with traffic congestion, for people’s commuting by train and bus to and from the workplace. Again, it is

²⁰² Baum & Pesch (1994)

²⁰³ From an interview (971124) with Joachim Schwarz at ECS, in Bremen, Germany.

important that the use of carsharing cars not become more convenient than the use of public transit.

The location of carsharing stations is another essential physical and practical precondition. 83% of StattAuto members live less than 20 minutes away from a station. In Switzerland, 69% of CSO members live less than 10 minutes away.²⁰⁴

The *economic* principles for membership in a CSO are ecologically interesting. Firstly, while the total expense for private car ownership is often perceived as diffuse and almost incalculable, carsharing costs are unveiled and simplified. Here the total expenses are imbedded every time the cars are used (see Membership expenses, chap. 4), something that makes carsharers more aware of the fact that car use, including use of carsharing cars, often is more expensive than public transit. Once a person has bought his or her car, relatively little money is saved by limiting the driving of it. By comparison, the total costs of carsharing cars are part of every payment for using them. This increases the motivation for limiting one's mileage in a CSO. A third aspect of carsharing costs is the direct comparison with expenses for private car ownership and use. Carsharing is said to be a bargain for people who drive less than between 12,000 to 15,000 km per year (see chap. 4: Membership Expenses). The average household in Norway for instance is claimed to save approximately US\$ 1700 - 2300 each year by abandoning private car ownership for carsharing (chap. 4, Ibid.). We hold, however, that the relevance of these estimations is determined by how the total costs of private car ownership are distributed. The total costs of a fairly old car would be interesting to weigh against the costs for CSO membership and use in another study.

Finally, carsharing managers have emphasized the importance of collaborating with local authorities in organizing carsharing. This is often stressed as critical for being able to initiate and expand the operation:

Further developments underway which should increase the attractiveness of car-sharing are cooperation with local authorities to obtain centrally situated public parking spaces to set up car-sharing stations.²⁰⁵

.....

- What other organizational and practical conditions may be of interest?
- Cooperation with the local authorities and the environmental protection organizations is important for the members.²⁰⁶

The need for collaboration with other local actors is closely tied to the fact that travel habits and changes in them are comprehensive actions. To improve the efficiency and convenience of public transit is one task for local authorities; improving the parking situation for carsharers relative to private car owner would be another motivating measure. Additional possible steps are that local governments a) become involved in informing the public of the CSO alternative, b) provide economic advice to car cooperatives in the initial phase, and c) take part in the planning of multi-modal mobility packages.

²⁰⁴ Muheim & Partner for ECS (1996)

²⁰⁵ <http://www.epe.be/epe/sourcebook/3.18.html>, from 970911

²⁰⁶ Interview 970919 with Peter Markusson, Car cooperative MAJORNA, in Gothenburg, Sweden.

All this can be done during trial periods during which the impact on mobility and environment may be tested and compared.

5.4 Further Studies on Carsharing

Hopefully this report has generated a number of questions that may help shed more light on the carsharing phenomenon. The most essential ones will follow here.

While organizations within ECS are fairly well-exposed, there are signs of widespread carsharing activity outside of ECS. This is often done on a smaller scale and directly connected to residential areas and neighborhoods. There is much more to be done to shed light on this phenomenon. What is the relation between ECS organizations and those outside of ECS? Are extra-ECS organizations generally aiming at becoming members of ECS? Or should a distinction be made between expansive ECS-focused organizations and small CSO:s, where the participants are content with keeping the number of members low? The issue of low profit orientation versus a total non-profit orientation should be included.

As was mentioned in the introduction, to select CSO:s to study on the basis of data availability may lead to a selection of CSO:s that are more successful than average. In another study the features found in this report might be used to compare CSO initiatives that have been successful (environmentally, organizationally, in terms of member rate), and initiatives that have failed, leading to closing-downs. Systematic comparisons of successful and unsuccessful projects, in which many features are similar are likely to be very illuminating.

Other comparisons could be done with car cooperatives and car rental companies specializing in carsharing. Does the organizational form matter for carsharing propensity? Are most carsharers as concerned about the organizational form as people of this study have assumed? Here the importance of member participation, both in decision making and practical maintenance of cars, can be examined. Is car maintenance by members an encouraging or discouraging factor for people who are toying with the thought of becoming carsharers?

Moreover, the role of acquaintances should be focused upon. Is the cooperation of acquaintances a strong motivating factor? Or does it disturb a wish for the privacy that many people appreciate with a privately owned automobile? Can a close sense of community be an obstacle to an increase in member rate, an obstacle to letting others in?

Related to sense of community is information efficiency. What information sources are the most efficient for making the membership rate grow? We have earlier seen that the mass media is a powerful source. But certain schools within social psychology claim that information spread between friends is most likely to lead to an emerging interest (see theory chap.). What can the local authorities do if they want to help with informing about CSO:s?

As carsharing continues to get more established will it be useful to study it over time? Are carsharers likely to stay carsharers? Or is CSO membership merely a stage in the mobility career towards private car ownership? This question could be investigated by comparing former car owners with former non-car owners. Age and life cycle stages of the members studied would be relevant variables as well.

We could see that the social segment of carsharers is rather narrow. Young people with a high level of formal education constitute a vast majority of CSO members in all the countries studied. When further projects are initiated, especially when research agencies want to treat carsharing projects as "experiments," it is certainly appropriate to choose residential areas and neighborhoods which correspond more to the average population than before, especially in terms of formal education and age. It is crucial to scrutinize the rather deterministic theory of the diffusion of innovations (see Demography), in which the new middle class is held to contain the obvious innovators. We emphasized that carsharing projects have so far been biased towards residential areas where the new middle class is over-represented. Several other features, both physical and social, in neighborhoods may very well be more important for raising the propensity for carsharing.

In the theory chapter we touched upon the issue of lifestyle of traveling and travel time. The thesis of the constant travel time was not completely applicable to former non-car owners, since their car use, at least when translated into mileage, did not come close to the levels of either former car owners (now members in a CSO) or present car owners. It would be fascinating to test our idea of "constant travel cost." What do former car owners do with the money they save by entering a CSO? This leads to a provoking question: Is the saved money used for leisure trips, airplane tickets, etc., so that the total environmental impact is even more negative than prior to the membership?

Finally, the symbolic and less "rational" aspects of the automobiles lead us to ask: Would the carsharing movement grow faster and become more solid if CSO:s became more open towards less functional and utility-oriented factors of carsharing versus private car ownership? Do CSO:s today over-emphasize the functional aspects of carsharing, at the expense of other aspects of car use that would work as strong incentives for private car owners to change their travel patterns? Would it be against the principles of automobile complementarism to include fun cars, sport cars etc. as a choice for carsharing members?

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